

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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# THE IRON AGE

THURSDAY, MAY 21, 1903.

## B. F. Jones.

Benjamin Franklin Jones, who has taken a very prominent part in the iron trade of this country for over 50 years, died at his residence in Allegheny, Pa., on Tuesday, May 19, in his seventy-ninth year. Mr. Jones was not only the oldest active iron manufacturer in the Pittsburgh district at the time of his death, but he was also the most highly respected man in the American iron trade. Throughout his career he maintained the loftiest standard of personal honor, and established for his firm a reputation for fair dealing and unswerving business honesty which placed the name of Jones & Laughlins on a plane attained by very few. So strong was his character and so well grounded were his convictions of right and justice that his principles were indelibly impressed upon those associated with him, and even though in the last few years he paid little attention to details, the standard of quality and reliability so long ago established by him has never been lowered. Mr. Jones endeared himself to his employees by his unfailing courteous and considerate treatment, while his competitors accorded him the respect ever due to a man in whom there was never even a suspicion of trickery or double dealing. His death causes universal sorrow among manufacturers and workmen.

The story of the life of B. F. Jones is a record of continuous activity and the able administration of great responsibilities. He was born at Claysville, Washington County, Pa., August 8, 1824. His ancestors for several generations were also of Pennsylvania birth. On his father's side he was of Welsh descent. His mother, Elizabeth Goshorn, who was of Pennsylvania Dutch and Scotch descent, was born in Franklin County, Pa. They were married in 1813.

In 1837, when 13 years old, he removed with his father's family to New Brighton, Pa., where he received a good academic education at a local institution. He was offered a liberal education, but preferred a life of greater activity. In 1843, when 19 years old, he left his home, and removed to Pittsburgh to begin a business career. Pittsburgh was then on one of the main routes of commerce between the East and the West. It was the era of canal transportation. The Pennsylvania in-

ternal improvement, partly canal and partly rail, had been opened from Philadelphia to Pittsburgh some years before. Mr. Jones' first employment was as assistant shipping clerk, at no salary, in the Pittsburgh office of the Mechanics' Line of canal boats. Samuel Kier, the chief owner of this line, took a great interest in the young clerk, and when he established the Independent Line of section boats, one of the first of this class to run between Pittsburgh, Philadelphia and Baltimore, and so constructed as to be adapted to use on both rail and canal, Mr. Jones, not yet 21 years of age, became manager of both lines of boats, at a salary at that time almost unprecedented. In 1847 Mr. Jones became a

partner with Mr. Kier and operated the line until 1854, when the Pennsylvania Railroad superseded the old system of State canals and railroads.

In 1846, while still acting as manager of the canal transportation line, Mr. Jones became connected with the great industry to whose development he devoted so large a portion of his life. In that year he purchased, in connection with Mr. Kier, an iron furnace and forges in the Allegheny Mountains near Armagh, in Westmoreland County. It is indicative of Mr. Jones' ability that the furnace operation while under his management was without loss. In 1851 he became connected with the works with which his name has since been identified, taking an interest in the American Iron Works, which were being built by Bernard Lauth, the firm name

being Jones, Lauth & Co. It was not until 1852, however, that Mr. Jones became actively engaged in the management of the works. In 1854 James Laughlin came into the firm. The firm name was changed to Jones & Laughlin in 1857, Mr. Lauth retiring. Subsequently the style of the firm became Jones & Laughlins, then Jones & Laughlins, Limited. This year their interests were incorporated under the name of the Jones & Laughlin Steel Company.

In the half century that has passed since his first connection with Pittsburgh's iron trade Mr. Jones witnessed a marvelous growth. At that date there was not a blast furnace in Allegheny County. The building of the Eliza furnaces in 1860, at that time the best of their class, gave an impetus to the building of coke blast furnaces in the West. These furnaces were among the first to use Lake Superior ores. His firm were also among the first, if not



B. F. JONES.



the actual pioneers, in buying coal lands and making coke in the Connellsville region. When coal was the only fuel used in the Pittsburgh mills they had one of the most extensive mining operations in the neighborhood of Pittsburgh, and when natural gas was discovered they drilled their own wells and laid their own pipe lines. In connection with their business they also, at an early date in 1857, established a large warehouse in Chicago.

Mr. Jones always took an interest in public affairs, whether affecting the city, State or nation, and did much at critical periods to mold public opinion. The close of the National Republican Convention in 1884 found Mr. Jones the member of the National Committee from Pennsylvania, and upon its formal organization, much against his own wishes, he was elected chairman. It is doubtful if any other incumbent of that trying position ever had a tithe of the complications to contend with that confronted Mr. Jones, yet only for an accident, for which he was in nowise responsible and could not have averted, a triumphant majority would have been secured for the candidate he favored. In January, 1885, the American Iron and Steel Association elected Mr. Jones as its president to succeed Daniel J. Morrell. This selection was pre-eminently a fit one. Not only had Mr. Jones come to be recognized as a leading iron manufacturer of the country, but his efforts, sometimes known but more frequently not seen by the general public, in behalf of all measures that would inure to the benefit of the industry of which this association is the organized head, pointed him out as the one man to be its accepted leader.

Mr. Jones was married on May 21, 1850, to Miss Mary McMasters, daughter of John McMasters, Sr., one of the best known citizens of Allegheny County. In his domestic relations he was as fortunate and happy as in his business career he has been successful.

It is given out at Indianapolis, Ind., that a gas and oil combination second only to the Standard Oil Company will be incorporated in Pennsylvania, and will include the following 16 Indiana, Ohio and Pennsylvania companies: Manufacturers' Gas Company, Indianapolis; Alexandria Gas Company, Alexandria, Ind.; Marion Gas & Oil Company, Marion, Ind.; Wabash Pipeline Company, Wabash, Ind.; Hartford Gas Company, Hartford City, Ind.; Clinton Oil Company, Clinton, Pa.; Southern Oil Company, Pittsburgh; Delmar Oil Company, Pittsburgh; Lancaster-Depew Gas Company, Lancaster, Ohio; Northwestern Ohio Natural Gas Company, Clarion, Ohio; Cameron Gas Company, Cameron, W. Va.; River Gas Company, Marietta, Ohio; Buckeye State Gas Company, Columbus, Ohio; Corsicana Gas Company, Corsicana, Ohio. The capital stock will be \$6,000,000, and Theodore N. Barnsdall is named as president of the new company. The present leases of the combined companies are now used principally for gas, but are in oil territory. The combination have a pipeline from the Virginia oil fields into Ohio, and it is understood will put a pipeline into Indiana.

On Wednesday evening, May 13, at Mechanics' Institute Hall, Cincinnati, Ohio, the Cincinnati Chapter of the American Institute of Electrical Engineers gave a reception to the civil and mechanical engineers for the purpose of inaugurating a scheme for bringing the engineers together periodically to discuss problems of general interest. Bion J. Arnold, the consulting engineer of New York and Chicago, who has been retained by the New York Central and Pennsylvania Railroad to solve their electrical problems of traction, and who has been nominated for the next presidency of the American Institute of Electrical Engineers gave a *résumé* of his report to the City of Chicago on its transportation problem, illustrated by stereopticon slides. Robert Lozier is president of the local chapter, and Charles Bogen is secretary.

According to a report from Sweden a patent has been recently granted in that country for a new method of recovering the tin which at present is being mostly lost in tin plate waste. For this purpose the material

to be treated is placed in a vessel of iron or of some other metal which possesses a greater electro-positive strength than tin. The receptacle is thereupon filled with caustic alkali, a depolarizer, such as copper oxide, having been also provided. An electric current is set up, the tin separating as alkaline stannate. When the alkali has been saturated with stannate a current of carbonic acid is injected into the solution causing the tin to separate as stannic hydrate. This is treated with an acid, and metallic tin is finally obtained from the resulting solution by means of electrolysis.

### The Assignment of Employees' Wages to Credit Companies.

The ever increasing no money down, credit to every one, concerns in the cities and larger towns of New England have become an almost intolerable nuisance to manufacturers, and in not a few instances notices have been posted in shops announcing in terms which show that the employers mean what they say that an assignment of wages to such a credit house will be considered sufficient cause for dismissal. The workman or clerk, whether man or woman, finds it only too easy to procure almost any kind of goods, especially clothing, and oftentimes luxuries of wearing apparel, jewelry and the like. All that is necessary is to show that they have positions and to sign an assignment of wages. This latter document is an iron clad agreement, drawn by skillful lawyers, and is well within the law, but wholly in favor of the no money down concern. Many workmen and working women find that it is not so easy to keep up the payments, and then comes the assignment of wages, presented at the office. So numerous are these calls in some shops that clerks have had much extra duty to perform keeping track of assignments. It has become an actual expense to employers, and they are shutting down on the whole business. Credit houses know the concerns who refuse to retain employees making assignments of their wages, and as fast as it becomes known the employees of such concerns are no longer granted credit. The posting of a notice that an assignment of wages to no money down houses will mean dismissal becomes a kindness to employees because it removes a temptation. In Massachusetts, and doubtless in other States, it is possible for a wife to tie up her husband's wages through credit houses, which is another complication which employers have to face. The Massachusetts Legislature has considered various remedies for the no money down evil, but without avail, the trouble being that to amend the statutes so as to remove the legal status of the credit houses would mean to abolish those workings of the laws relating to the assignment of wages, which are strictly beneficial in their effects and for which the statute was intended.

W. O. Duntley, vice-president and general manager of the Chicago Pneumatic Tool Company, has returned from a business trip abroad, where he visited several prominent shipyards, manufacturing establishments, &c. He secured a number of large orders for the various pneumatic appliances manufactured by the company. Mr. Duntley reports that pneumatic tools are rapidly being adopted in the shops throughout Europe, this fact being particularly noticeable in the large shipyards. Mr. Duntley also advises that the foreign plants of the company are taxed to the utmost capacity, with the outlook so bright for future business that in all probability extensive improvements will be necessitated to properly care for the orders offering.

At a special meeting of the Cramp Shipbuilding & Engine Company May 18 the following new directors were elected: F. L. Hine, vice-president First National Bank of New York; J. W. Dunn, New York, president of the International Steam Pump Company; E. C. Converse of New York, and Harry A. Berwind, H. S. Grove and William M. Potts of Philadelphia. These directors resigned: C. A. Griscom, Samuel Dickson, Morton McMichael and Thomas Dolan.



## Coal Trade Conditions.

### Anthracite Active—Bituminous Tonnage Increasing—The General Outlook Good.

BY FREDERICK E. SAWARD.

There is no doubt that coal is in demand. The efforts of the owners in the past to get a profit from it have heretofore been more or less unsuccessful because the demand has not equaled the ability to supply. Happily in recent years, by reason of the material progress of the country, this condition of affairs has changed, and the resulting benefits will accrue to the ownership of this valuable property. During the unprofitable years there have been many changes, and the greatest among them is that of control; from the days of a multitude of small operators, each one vying with the other to do as large a tonnage as possible without much regard to financial outcome, we have latterly come to a businesslike condition.

There is no question but that the coal trade is attracting attention from many quarters, for it is chief of the fundamental sources of our prosperity, and one has but to note the very rapid increase in the tonnage of this country as compared with that of any other to see that there is foundation for all the cheerful reports which come to hand regarding it. Wherever one may go there is the same story of an improving and an increasing demand for coal lands; there is more being opened up this year than ever before, and it is highly necessary that it should be because this country used up 250,000,000 tons of the bituminous coal last year. No one will for a moment believe that there is any let-up to its progress thus far this year, nor does there look to be any for years to come. When one considers that, in addition to the anthracite coal which was turned out last year, the State of Pennsylvania alone yielded 98,000,000 net tons of bituminous it may be taken for granted that there was "something doing" in the Keystone State, and this calls for more mines to be opened each and every year, if such an output is to be continued. It is an interesting fact in connection with the bituminous coal trade of this country that it is fast getting into fewer hands; that 25 concerns last year did nearly one-half of the tonnage, headed by such concerns as the Pittsburgh Coal Company and the United States Steel Corporation, and both these concerns have millions of tons of coal yet untouched that will come into play when the necessity occurs for the exploitation of their property; this property, too, was acquired at far less price than similar property could be had for to-day.

The anthracite people are going ahead with output as expeditiously as they can in spite of all the drawbacks of indifferent help. Help that was considered so poorly paid has taken a hand in the management, as it were, of this industry, and if it so desires can put up the price of coal to the consumer by restricting the output. It must be remembered that the wages are now based on a sliding scale of prices, and if the market price is advanced from any reason whatever the laborer in the mines gets a corresponding benefit therefrom. Knowing this, one need not be surprised at the constant petty troubles at the mines—fully as many as heretofore—which keep the market from going "off" in the way of values. No one need look for the accumulation of any great surplus of anthracite for this very potent reason. Perhaps some day there will be a greater use of mechanical contrivances that may tend to give us more tonnage, but while we are dependent so much on labor to do as it pleases there is not any likelihood of there being cheap coal despite the ravings of the yellow press. There has been the instance within the past few days where the men in one of the districts, by order of the executive committee of the U. M. W., are forbidden to work more than a certain length of time, even if paid well for the extra time. They are not going to do anything to give the producing companies a chance to get a stock of coal ahead if they can prevent it. Were the corporations to do anything to forestall the market to any such degree

as is here outlined what would not be the outcry of monopolists, &c.!

Touching upon the subject of the concentration of interests in the soft coal districts of our country, it may be of interest to note that this will go on in even greater degree in the near future—the dozens of small concerns will amalgamate and thus present a better opportunity for profit under any and all conditions of trade. Movements along this line are on foot in Illinois, Indiana, West Virginia and Alabama. Surely a concern under one management, having a tonnage of a million tons annually, is in better shape for trade than are a score whose aggregate is that amount. The success of the Pittsburgh Coal Company proves this, as does that of the latest aggregation known as the Weaver Coal & Coke Company, in which John W. Gates is now so largely interested. This is a particular instance of the fact that the coal trade is attracting attention from outside quarters. The result is not to make coal dearer to the consumer but to give a steadiness to prices such as cannot exist where there are a number of small operations. With the latter there are necessarily violent fluctuations from one cause and another within the shipping season. During the late eager demand for fuel it was the man who had a daily output of 200 tons who made the high price, for the concern with a capacity of 5000 tons a day had contracts which were adhered to rigidly, and the consumer is not apt to forget that fact.

Bituminous prices at tide points fell off during the past few days, and line prices also sustained a drop. The indications point to a gradual decline in the market until the summer level has been reached. While a considerable amount of contract business has been closed there are still a number of large consumers who are unwilling to tie up for the year at present figures. This would not be the case, perhaps, if the great industries were not beginning to feel the effects of the exacting and, frequently, unreasonable demands of organized labor. Many Eastern Pennsylvania manufacturers who generally contract by the year are now buying by the carload, as much to economize in their purchases as to benefit by possible reductions in the price of coal. In New England the cheaper grades of coal are very plentiful and are forcing the market in every direction, but consumers have had so much trouble over cheap coals that the buyers are very particular what they buy, and this kind of coal does not have a ready sale. The better coals are in good demand for this time of year, and the wiser ones, fearing the possibility of trouble on the railroads later, are gradually laying in a stock of fuel. The probability of trouble on the railroads from short supply of rolling stock and motive power is real. Every day shows more clearly the difficulties that are sure to overtake us in the early summer and continue nobody knows how long, because the railroads are not in shape to handle the heavy traffic that will be offered them during the summer and fall.

The extensive power works in the vicinity of Niagara Falls make the locality particularly interested in the correspondence that is now taking place between Secretary Hay and the British Foreign Office in regard to maintaining an adequate depth of water in the great upper lakes. These lakes are the natural reservoir from which flows all the water that creates the eye feast as well as the power developed at Niagara, and any obstruction of the flow must naturally have much of interest to the millions of capital invested at Niagara, as well as to New York State and the Province of Canada, for its effect on the surroundings of the great free parks must be considered. An act of Congress authorizes the appointment of a joint international commission to consist of three American and three British members. This commission will study the conditions and endeavor to solve the problem of how best to maintain the lake levels. A deep waterway commission has already considered the matter and decided that the cost of the so-called improvement would be \$796,923. Among the results sought are the raising of the water in lakes Huron and Michigan, about 1 foot, and in the St. Clair channels about 2 feet. The general idea is that a dam erected at the foot of Lake Erie, near Buffalo, will give the desired results.

## Pacific Coast News.

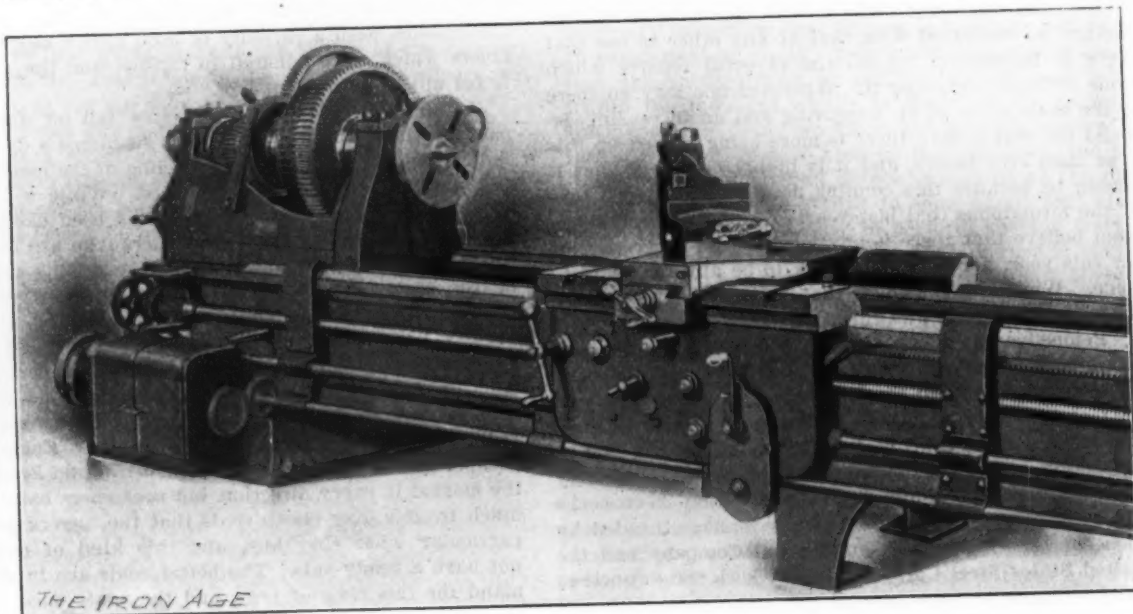
SAN FRANCISCO, May 6, 1903.—May 1, 1901, was signalized in this city by the preparations for the inauguration of the great strike at the Union Iron Works and other establishments. May 1, 1903, is notable for the what we may term final conclusion of a treaty of peace between the iron workers and the masters of the iron trade in this city. The nine-hour day and an increase of pay for all employees have gone into effect. There are about 4000 men and boys affected by it. All will have ten hours' pay. Thus ends one of the most destructive labor wars that San Francisco has ever had. This is, of course, the beginning of the end of the state of things where San Francisco and the West paid much higher wages than in the East, and matters will gradually settle down so that the labor that is paid at the rate of \$3.50 per day in this city will be paid at the same rate in New York. This of course will work to the benefit of the West, as the discrepancy in wages was something that it was very hard to contend against.

This and the death of one of the founders and a leader for most of its latter day existence, President Irving M. Scott, constitute events of importance in the

requisite speed and a little to spare. San Francisco is famous for that. Her armament will consist of ten 5-inch rapid fire rifles, eight six pounders, two one pounders and four Colt's automatic guns. Her hull will be copper sheathed.

All of our foundries and machine shops are actively engaged at present in turning out work for the new buildings in the city or in the manufacture of mining machinery, &c. Indeed, there never was such a condition of prosperity in the iron industry of this city before. The new home of the American Steel & Wire Company on Fifteenth and Folsom streets is a perfect industrial hive, and in the amount and value of its products will leave 1902 far behind. And yet 1902 was the best previous year in its history. The Risdon Iron Works, too, are doing a fine business, as indeed are all the other foundries great and small in the city.

In iron, steel, hardware and metals both import and export trade has fallen off somewhat of late. There are a great many bicycles being shipped to Japan on the steamers and some to other places, but the shipments of machinery have declined. In the matter of imports there are 19 vessels on the way or loading from Antwerp and ten from Newcastle-on-Tyne with pig iron and



THE REED ELECTRICALLY DRIVEN ENGINE LATHE.

story of the iron industry in San Francisco. The conditions of the foundry and hardware business are gradually undergoing a complete change. Irving M. Scott was no favored child of fortune. He started in life in San Francisco as a draftsman in the office of the patent agency carried on first of all by Ewer & Smith and then by Dewey & Co. From here he went to do the same work in the Donahue Foundry, the Union Iron Works and here he and his brother rose step by step until they became managers and principal owners of the stock. They had no easy time, for the old foundry had fallen on evil days. But by their energy and industry it was built up and a new lease of life given to it by the introduction into it of iron and steel shipbuilding. Mr. Scott leaves worthy successors in his brother, Henry T. Scott, long united with him in the management, and President Dodd, long the manager of the foundry. Everything is going on well there at present, and soon another big vessel will slide from the ways into the waters of the bay. The cruiser "Tacoma" will, everything favoring, be launched on June 2. She is a protected cruiser, and on account of her name, a delegation from the northern city will be present, while L. D. Campbell, the Mayor, will receive a special invitation. The vessel has been under construction for the past three years. She is 292 feet long, 44 feet wide and has a draft of 15 feet. She has a displacement of 3200 tons and must have a speed of 16½ knots. It is, perhaps, too much to say in advance of the trial, but there is no doubt that the "Tacoma" will have the

structural steel, but none of them are due for three weeks yet and some for a considerably longer time. J. O. L.

### The Reed Electrically Driven Engine Lathe.

The F. E. Reed Company of Worcester, Mass., are completing an order for six electrically driven engine lathes for the new Standard Plunger Elevator Company's shops in the same city. They are massive machines, each having a 30-foot bed, and two of them 30 inches swing and the other four 24 inches swing. They will be used for turning elevator plungers.

These machines have features in their electric drive which are worthy of note. This particular problem of motor driving involved the use for each machine of a 240-volt Bullock motor of 8 horse-power, at 1200 revolutions a minute, with the system of multiple voltage control for variable speeds. The motor is mounted on an extension of the leg of the lathe at the rear of the head. By direct gearing the speed of the motor is reduced about one-third. From the driven shaft connection is made with a sleeve upon the head spindle (an equivalent of the usual cone) by means of a Hands-Renold silent chain. Variations of ten speeds are obtained for the spindle by the use of the controller without back gearing. Two gears on the eccentric back shaft, controlled by a lever at the front of the head, brought into range of either of the two pinions upon the spindle

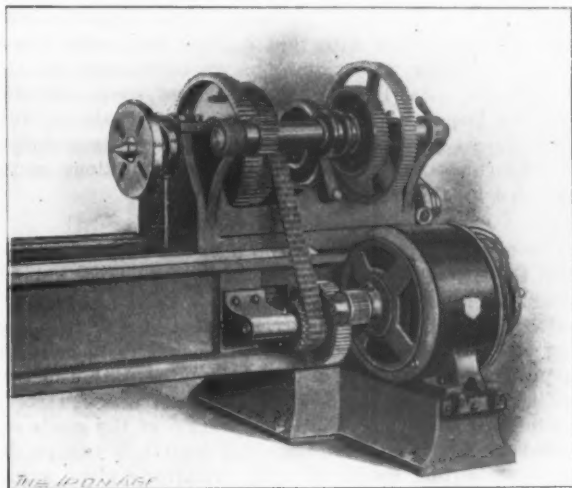


sleeve and thrown into gear, provide two more sets of speeds, giving a total of 30 speeds to the spindle, from  $2\frac{1}{2}$  to 180 revolutions a minute. The controller is mechanically operated from the apron of the lathe through gears and shaft.

### The New England Foundrymen's Association.

The monthly meeting and dinner of the New England Foundrymen's Association was at Hotel Essex, Boston, Wednesday evening, May 13. Vice-President B. M. Shaw of Boston presided in the absence of President Henry A. Carpenter of Providence, R. I. There was a large attendance. Interesting papers were read by S. D. Leland, of the building committee of the United Shoe Machinery Company of Boston, on "Interesting Points in Connection with Modern Manufacturing," and by S. B. Patterson of Oxford, N. J., assistant to the president of the Empire Steel & Iron Company, on "The Quality of Pig Iron in Foundry Use as Indicated by Fracture and Analysis."

Mr. Leland's paper was based on the observations of the building committee of the United Shoe Machinery Company in their travels through modern machine shops, foundries and other manufacturing establishments, for the purpose of getting information to govern them in



Rear View of Head Stock.

### THE REED ELECTRICALLY DRIVEN ENGINE LATHE.

making the plans for their company's new shops, to be erected at Beverly, Mass.

One new member was admitted, the Manufacturers' Foundry Company of Waterbury, Conn. Those present were:

Vice-President B. M. Shaw, Walker & Pratt Mfg. Company, Boston.  
 Secretary Fred F. Stockwell, Barbour & Stockwell Company, Cambridge.  
 S. D. Leland and Sherman W. Ladd, United Shoe Machinery Company, Boston.  
 S. B. Patterson, Empire Steel & Iron Company, Oxford, N. Y.  
 I. H. Winchester, Magee Foundry Company, Chelsea.  
 Robert Blytt, Walker & Pratt Mfg. Company, Boston.  
 E. B. Pierce, Wheeler Foundry Company, Worcester.  
 E. P. Robinson, Atlantic Works, East Boston.  
 W. F. Savage, Taunton Iron Works, Taunton.  
 Robert P. Cunningham, Deane Steam Pump Company, Holyoke.  
 J. E. Plimpton, J. E. Plimpton Company, Norwood.  
 C. Hitch, Jr., American Tool & Machine Company, Boston.  
 Harwood Willson, Rogers, Brown & Co., Boston.  
 W. H. Coffin, Springfield Foundry Company, Springfield.  
 Walter M. Saunders, Providence.  
 E. J. Lyons, Brown & Sharpe Mfg. Company, Providence.  
 Henry Souther, Hartford.  
 William J. Baush, Baush Machine Tool Company, Springfield.  
 Harry E. Gibbs, William H. Stafford and George A. Gibby, Concord Iron Foundry Company, East Boston.  
 Joseph L. Anthony, Weir Stove Company, Taunton.  
 D. F. Eagan, H. E. Pridmore Company, Chicago.  
 P. Shields, Shields Foundry Company, Mansfield.  
 E. V. Hazard, Old Colony Foundry, East Bridgewater.  
 Fred. W. Dixon, Taunton Locomotive Mfg. Company, Taunton.  
 Walter B. Brown, B. F. Sturtevant Company, Hyde Park.

A. L. Lovejoy, Becker-Brainard Milling Machine Company, Jamaica Plain.  
 John Nelson, *The Iron Age*, Worcester.  
 George B. Buckingham, Arcade Malleable Iron Company, Worcester.  
 W. D. Ballard, Coburn Trolley Track Mfg. Company, Holyoke.  
 W. H. Beuse, Kinsley Iron & Machine Company, Canton, Mass.  
 J. F. Blauvelt, New England Butt Company, Providence.  
 Charles A. Reed, N. S. Bartlett & Co., Boston.  
 Fred. A. Hoyt, Barbour-Stockwell Company, Cambridge.  
 Charles T. Colvin, Colvin Foundry Company, Providence.  
 James F. Lanigan, Davis Foundry Company, Lawrence.  
 M. F. Perault, Fitchburg.  
 William C. Doherty, Doherty Bros., Lowell.  
 L. H. Baird, Pilling & Crane, Philadelphia.  
 Edward W. Beach, Manufacturers' Foundry Company, Waterbury, Conn.  
 R. S. Bosworth, Rogers, Brown & Co., New York.  
 George H. Lincoln, George H. Lincoln & Co., South Boston.  
 S. M. Thompson, Barbour-Stockwell Company, Cambridge.  
 William Harvie, Vaughn Machine Company, Peabody.

**The Molders' Strike at Chester, Pa.**—The strike of the molders of the Chester Steel Castings Company, Chester, Pa., has been settled, and the men have returned to work with the agreement that there shall be no distinction between union and nonunion men. The company agree to pay a minimum wage rate of \$3 per day of ten hours to all molders in the open hearth foundries, piece work prices to remain unchanged. An adjustment will be made shortly in the wages of the men in the McHaffie department of the company. The situation at the works of the Penn Steel Casting Company, where a strike of molders exists, remains unchanged, although some of the men have returned to work.

Some of the large office buildings in New York have their subcellars much below tide water level, to such an extent that the seepage into them is very great and has to be pumped out, and the sewage as well. At a suit recently brought in this city against the Battery Place Realty Company, owners of the Whitehall Building, by the Bowling Green Warehouse Company it was alleged that the boilers of the former concern had injured their property by heating the cellars to such an extent that they were no longer available for storage use, the temperature being increased from 50 degrees originally to 80 degrees after the boilers were put to work, and the plaintiff asked that the boilers be moved back from the party wall a few inches, at a cost of \$7000. The answer was that the boilers were built into the wall, and could not be moved back without virtually rebuilding parts of the structure at a cost of \$200,000. Moreover, to stop the boilers from working would not only cut off the light, heat and elevator service, but would actually destroy the Whitehall and adjacent buildings, for the Whitehall cellars were below tidewater level and leaked to the extent of 200,000 gallons daily (about 4500 barrels), all of which had to be kept down by pumps to prevent flooding. This must have been apparent when the Whitehall Building was being erected, and the necessity for constant pumping shown. In any case it is anomalous that steam boilers should be integral with a party wall for reasons apparent to all engineers. Decision was reserved.

A new law for the regulation of automobiles in New York State and city is most drastic and prohibitory to general use with any great satisfaction. The things that owners of them may do are very few in number compared with those which they may not do, and there seems to be an intention to hamper owners of such vehicles as much as possible. A speed of only 8 miles an hour in cities is permitted, 10 miles where the houses are more than 100 feet apart. Speeds of 20 miles per hour are allowed in towns and villages, but drivers must not pass persons or vehicles at the rate of over 8 miles an hour. A license fee of \$1 per year is exacted and this must be carried on the person. Automobiles must be stopped to a standstill upon the request of any person riding or driving a restive horse or domestic animals. Violations of the law are punished by a fine of \$50 for the first offense, fines and imprisonment for the second offense, and revocation of license for the third.

## Drawback Entries Suspended.

### Question Raised Concerning Obsolete Regulations.

WASHINGTON, D. C., May 19, 1903.—Considerable uneasiness among manufacturers and exporters has been occasioned by the suspension of a number of important drawback entries at the port of New York upon instructions from Washington. The parties in interest include certain large exporters of steel products and the basis of the action taken is the fact that the entries were made in advance of the establishment of a rate of drawback by the Treasury Department. The anxiety of the trade concerning this development is not only because of the magnitude of the suspended accounts, but also because the action of the Department appears to be a step backward in view of the widely heralded intention of Secretary Shaw and his associates to liberalize the drawback regulations as much as possible and to co-operate in the movement for more liberal laws.

Whether the failure to file an application with the Secretary of the Treasury to fix a rate of allowance is a technical shortcoming on the part of the exporter or not, it is conceded by the Treasury officials that this requirement has not been enforced at New York for a number of years. The regulations prescribed by the Treasury Department under the provisions of the drawback law as found in section 30 of the Dingley act undoubtedly have the force of law, but it is equally certain that exporters who comply with those regulations as they are construed by the customs officers at the principal ports of the country cannot either in law or equity be made to suffer for failure to meet the exact views of the Department in the matter of mere detail. The only provision in the general regulations which would seem to justify the Department in ruling that no drawback can be allowed on articles exported under a preliminary entry prior to the filing of an application is article 789, Treasury Regulations, 1892, which is as follows:

No drawback shall be allowed on any article of domestic manufacture exported until the rate of allowance has been established by the Secretary of the Treasury. Application for allowance on an article for which no rate has been established shall be made to the Secretary of the Treasury.

Whatever the original intention of the Department as to the interpretation of this provision may have been it has not been construed at the port of New York to mean that drawback entry should not be received until the rate of allowance had been established by the Secretary of the Treasury. The presentation and consideration of the formal application afford no protection to the Government for the reason that in every case the drawback entry, which must be made at the port of exit before the goods are laden, furnishes the only description necessary to enable the customs officers to inspect, weigh, measure and fully identify the exported products. If the records of the manufacturer have been so kept as to enable the Government to determine that imported materials of the kind and quality alleged were used in the production of the goods exported, drawback can then safely be allowed.

The great advantage of this method, which has been in vogue so long in New York, lies in the fact that manufacturers are thus frequently enabled to fill export orders received by cable on the shortest possible notice, too short, in fact, to permit the elaborate sworn application contemplated by the regulations to be prepared and forwarded to Washington before the preliminary drawback entry is made. To the extent that the sworn application describes the goods for the purpose of identification it is merely a duplication of the preliminary entry and has been so regarded by the drawback authorities at New York. It is easy to see that if the regulation is to be interpreted to mean that no entry of goods for export with benefit of drawback shall be made until the formal application has been received and the rate of allowance fixed, manufacturers and exporters would be obliged to decline a large amount of foreign business which they are now able to accept. The fixing of the rate of allowance is frequently based upon elaborate calculations and applications are usually transmitted to Washington and returned two or three times in each

case, and are also made the subject of investigation by special agents before the rate is finally determined. If it should be held to be necessary to withhold preliminary entries while the application traversed this elaborate routine, it is obvious that by the time the rate was fixed the order for the goods would have been canceled and the business lost. The officials at New York express the fullest confidence that the regulations as heretofore enforced afford the amplest measure of protection to the Government, as the determination of the character and quantity of the goods exported is never based upon the manufacturer's application but solely upon the preliminary entry against which the shipment is uniformly checked.

It is understood that the action taken in the cases referred to, in which entries have been suspended for failure to file applications for the fixing of rates of allowance, is based upon a general overhauling of customs practice incident to certain changes in the personnel of the Department service. When the officials now in charge learned that entries were being received at New York prior to the filing of applications they issued orders suspending such entries as had not been acted upon and instituted an inquiry as to the practice at other ports. The information received from other Atlantic ports is to the effect that the collectors have required applications to be filed before the presentation of preliminary entries, but exporters doing business at New York claim that the drawback business with other ports is so small in comparison with that at New York that literal compliance with the regulations as interpreted by the Department is fairly practicable. It now seems probable that the Department will instruct the officials at New York to pass all the suspended entries on the ground that the exporters have complied with the regulations as interpreted by the collector's representations.

#### Future Practice.

As to the future practice, no decision will be reached until the investigation now on foot is completed, but Assistant Secretary Armstrong, who has charge of customs matters has informed the correspondent of *The Iron Age* that the Department will not be disposed to insist upon the filing of applications prior to the presentation of preliminary entries, provided the manufacturers' records are in such shape that the identification of the goods exported as the product of imported materials can be determined beyond question. Mr. Armstrong gives assurance that he will administer the drawback laws and regulations in the most liberal spirit consistent with the protection of the revenue and that it is not his purpose to place any obstacle in the way of manufacturers who desire to build up their foreign trade. While the requirement with regard to the filing of an application prior to the preliminary entry would not always be impracticable, it is believed it would unnecessarily complicate the drawback business and, as shown above, it would in many important cases prove absolutely prohibitory.

#### Recent Drawback Regulations.

Regulations heretofore issued upon the application of the Morgan Spring Company of Worcester, Mass., for the allowance of drawback of duty paid on imported steel billets used in the manufacture of certain kinds of wire have been extended by the Department to cover "round wire, plain, bright or copper finish but not including galvanized or tinned wire" manufactured from rods rolled from imported billets and also to furniture and spiral springs manufactured from the same kinds of wire. It is provided that allowance of drawback shall not be made on a greater quantity of imported material than that found by adding to the net weight of the exported wire the proper percentage as prescribed in schedules accompanying the manufacturers' statements. In the case of furniture and spiral springs, the quantity of imported material used shall be obtained by adding to the net weight of the springs 8.45 per cent. in the case of furniture springs and 7.97 per cent. in the case of spiral springs to allow for waste.

W. L. C.

The labor difficulty at the Roberts Iron Works, at Cambridge, Mass., has been adjusted, so that the possibility of trouble from the boiler-makers has been removed.



## Lake Iron Ore Matters.

DULUTH, MINN., May 17, 1903.—The middle of May finds the lake fleet busy, but with freights showing a downward tendency that is liable to continue in weakness all summer. There is nothing to indicate any strength to the vessel market. New ships are coming off stocks almost weekly, and are wheeling into line for ore as fast as they are ready. There is enough for all to do, but shippers do not care to press for tonnage, especially as the amount of ore sold ahead for delivery is not great. The wheat rate is down to 1¼ cents from Duluth to Buffalo, equal to 47 cents a gross ton for ore, but this is on account of conditions singular to that trade, and there is no possibility that ore will reach any such figure, though the wild summer rate is very probably to be less than the season contract rate now in force.

The steel steamers "John Lambert," "D. M. Clemson" and "D. G. Kerr," names familiar to the steel trade, are being launched, and are going into trade between the upper lakes and tidewater on the St. Lawrence, along with seven others for the same parties. A. B. Wolvin of the Pittsburgh Steamship Company is manager of the company and prominently identified with them financially. Contracts for what is to be the largest lake ship have been signed, it is stated, the ship to be built on the Detroit River. It is to be 500 feet long over all, just 2 feet more than the four boats built by the American Steel & Wire Company when J. W. Gates was a factor in the management of that company. These four were, and are still, the largest lake ships, and since their construction the tendency has apparently been away from such extreme lengths toward a vessel 50 to 75 feet shorter and supposed to be more handy.

### New Explorations.

No little interest is developing in possible ore lands in the Marquette district. The ore bearing formation extends west from mines at Ishpeming for many miles and in a varying width. At scores of places where the formation outcrops work has been done in times past, and at many of these points ore was found in more or less quantity and of varying quality. At the old American mine, in section 32-48-28, 8 miles west from Ishpeming, much work was done years ago, and the showing was excellent when the mine closed down in 1892. The same formation continues on westerly for miles. There is also the south formation, on which are the Fitch, Saginaw and Goodrich mines. This runs on west and north to Humboldt, and on west to Lake Michigamme and the Champion mine at Beacon. It is at a general distance of 2 to 3 miles from the north formation marked by the Dexter, American, Phoenix and Michigamme mines. North from Ishpeming is still another promising formation. Modern methods of exploration and development should do much for all this region, and with the change that has come over the ideas of operators as to ore values and grades, improved exploratory methods, and larger funds available for such work, it is very probable that mines of importance can be opened there. In the Cascade range, east of the village of Palmer, and 4 or 5 miles southeast from Ishpeming and Negaunee, there is abundant opportunity for exploration where the character of the ores already found is such as to hold out promise. Much of these districts is already being taken up for exploration, and by the big people of the lake country, and it is entirely safe to assert that much money will be economically spent there in the near future. Announcement of transfers of ownerships and of the commencement of operations may be made any time. In the long, narrow trend of ore bearing formation running southeasterly from Lake Michigamme, and terminating in the Republic fold, there is opportunity for continued exploration, which is liable to be undertaken shortly. That the Champion and Republic mines, situated in distant parts of these districts, have been so long successfully mined is an incentive to further enlightened and energetic work all along the line.

### The Vermillion Range.

The Bishop Iron Company, a branch of the United States Steel Corporation, have commenced work explor-

ing the famous "Hyde forty" which lies in section 30, on the Vermillion range. This was included in the long litigation over section 30, though a distinct question from that known as section 30 itself. The Bishop Iron Company did own, after years of litigation, a thirteen-twenty-fifths of the fee to the Warren eighty, of which the Hyde forty is the west half. They have since then bought most of the remaining twelve-twenty-fifths, and have a lease on the rest at the rate of 25 cents a ton for all, and without minimum or time in which to commence mining. That they now begin work there is suggestive and important. The Section 30 Company have a drill on the tract immediately north of that now put on the Hyde forty by the Bishop Company, and pointing south, while the Bishop Company's drill is pointing northerly. The Section 30 Company are now putting on more drills in their lot six, where they are reported to have excellent indications. On the Macomber land in section 14-62-14, a few miles east from Ely, the Mahoning Ore & Steel Company have recently added a second drill, and are said to be meeting with encouragement. These are the important explorations under way on the Vermillion range at this time.

Shipments from this range are now heavy, especially from the Ely mines, and will be very much larger this year than in the past. At the Pioneer, Zenith, Sibley and Savoy new and deep shafts of large dimensions are being constructed, all those but at the Zenith being about ready for work. These are capable of a very heavy production, and will be the main shafts for their respective mines. There has been talk for some years that the Duluth & Iron Range road was to build a new line to Ely, shortening the distance and cutting off hills between the Mesaba and Soudan, and though there is no official notice of this work it will probably be carried out in due time. It will be hastened by developments on the various explorations mentioned above, any of which may find ore bodies to give it large additional business.

### The Mesaba Range.

Shipments from the new Leonard mine of the J. J. Hill interest, near Hibbing, will probably not commence this year. At the point where stripping is now commencing there is a thickness of overburden of about 70 feet, and it will take all this year to get this off. The average stripping for this property is not so great, but it is one of the heaviest jobs ever undertaken on the range, and is indicative of the greater depths of earth that now can be economically taken off an ore body.

Shipments have commenced for this year from the Sharon mine, at Buhl. This was the property of the Sharon Steel Company, but is now worked by the Minnesota Iron Company. It is a very large ore body, not of the highest grade, but of an ore that is especially adapted for the furnace. The mine has been largely increased in importance since last year, and is stripped for a very large output, which is made by the milling process. Shipments have also commenced from the Biwabik and Stephens. The former has been increased in importance by additional stripping and a new through cut, and the latter has been two years in preparation for mining on a large scale.

Explorations on the Mesaba are as large as the number of drills and operators possible to secure will permit. Much work is hung up till a later season on account of the lack of machines with which to carry it forward. Drills in numbers have been absorbed by the larger companies who are working around Hibbing, proving the extent and value of deposits already known to exist. It is stated that one drill has been up on the so-called Highland range, where it will endeavor to find a possible ore bearing formation.

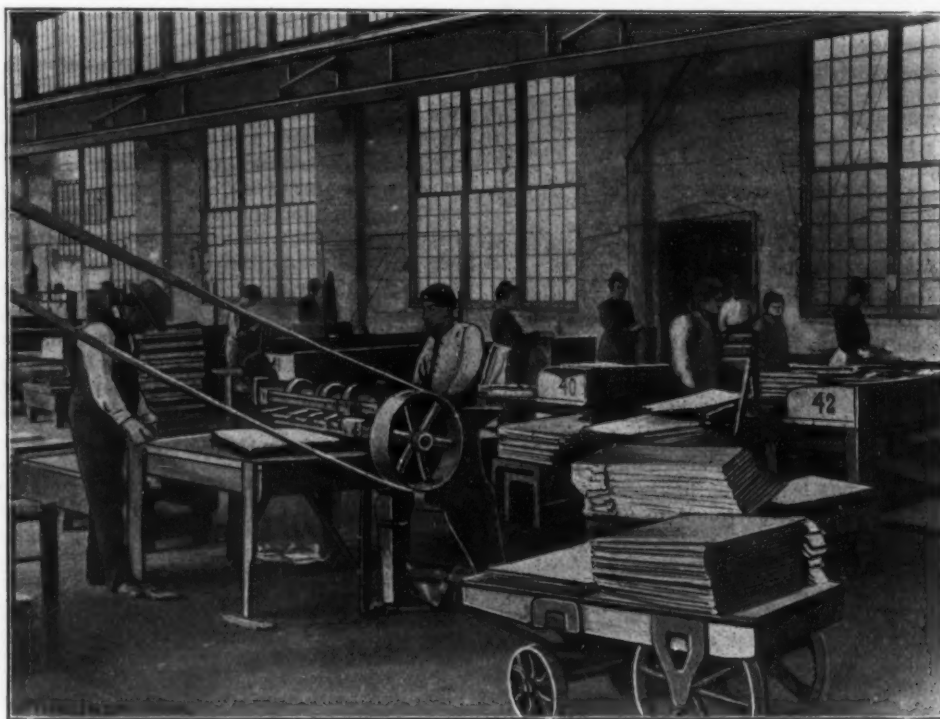
D. E. W.

An item in the daily press asserts that the Western Union Company are about to equip a line of pure copper wire, 11 wire gauge, between New York and Montreal, a distance of 400 miles. The weight of this, according to Clarke's Manual, is about 90,000 pounds for one wire only, and gives some idea—when multiplied by the cost per pound—of the expense of equipping lines with copper wire.

### The Increasing Use of Terne Plates for Roofing.

After a period of stagnation, which extended over several years during the last decade, the use of terne plates or roofing tin for house covering has largely increased during the past two or three years. Architects, builders and roofers have generally maintained that there is no better roof than a good tin roof, provided the emphasis is placed on the word "good." It has been realized that the use of inferior grades is bad economy, especially in this class of material, and the fact that the best is the cheapest in the end is recognized by both consumers and producers. The high grades of terne plates which are now made by the American Tin Plate Company give thorough satisfaction, and as the building public are becoming more and more convinced that terne plates of lasting quality can still be obtained, and are getting acquainted with the brands which meet this requirement, their use is increasing proportionately. Our readers will be interested in a description of the painstaking

of them in the bath of boiling palm oil. The plates remain in this bath for about 20 minutes, and during this time the water which adhered is evaporated and the surface of the plate becomes susceptible for an amalgamation with the molten tin and lead mixture. The plates are then dipped in a pot containing the molten alloy and remain there for about 20 minutes. The oil from the sheets now floats on top and thus nothing but the pure iron surface is brought in contact with the molten metal. After being covered thoroughly the plates are transferred to the soaking pot, which is also filled with molten metal. While a new batch is being prepared in the oil and tin pots the plates are taken out of the soaking pot, one by one, and carefully brushed on both sides with a hemp brush to spread the coating thoroughly and to remove any oxide or dross which might adhere, and are then again dipped singly in a third metal pot filled with an extra refined quality of molten metal, which is kept covered with oil to prevent oxidation. The finishing part of the tinning process, in which the plates are



*Shearing, Weighing and Counting Terne Plates at the Laughlin Tin Plate Works.*

#### THE INCREASING USE OF TERNE PLATES FOR ROOFING.

care with which the high grades of roofing tin are made, inspected and assorted, in the various stages of manufacture, at the Laughlin Tin Plate Works of the American Tin Plate Company, at Martin's Ferry, Ohio. This is the tin plate plant which was so highly commended by members of the Mosely Industrial Commission of Great Britain for the appliances which had been introduced for the comfort of the operatives. Such great care is taken with the product of these works that sheets with slight defects, noticeable only to experienced eyes, and which would without hesitation be passed as primes by many practical men, are here rejected. The accompanying illustrations are of interest in this connection.

The first assorting is done after the polished black plates come from the second annealing, and all defects that can be detected are culled. The thin surface oxide, or air scale, caused by the annealing, is then removed by white pickling, or dipping the plates in a weak solution of acid, and then washing them in clean water. While this washing is going on, an inspector is sharply on the lookout for sheets not properly cleaned. From the white pickling the plates are taken to the extensive tin house, in which the MF and Morewood palm oil processes are practiced principally, and here the sheets are again inspected one by one and defects, if any, picked out by the tinman as he immerses a batch

again passed through oil and in which the amount of coating is determined, is practiced in several ways, but the process by which the MF and U. S. Eagle New Method brands of plates are finished is considered by the company the most reliable. Coming from the tin stack, the plates are passed through a machine filled with bran to neutralize the adhering grease, which later is in turn removed by a pass through a set of sheepskin covered rollers, and the plates are then placed on the assorting tables.

The final assorting of the plates is a very important part of the proceeding. It is done by girls, who stand side by side at long tables, each busily turning over sheet after sheet, inspecting both sides, and assorting them into "primes," "menders" and "wasters." It has been found that girls with nimble fingers to handle thin plates and with quick eyes to catch defects are much better adapted to this occupation than men, who in former years performed this part of the work. The occupation must be a healthy one, for they appear to be happy, contented and attentive to their work. Nevertheless they work under strict supervision, each one being aware that careless assorting brings a penalty. All plates that are not strictly prime are reworked. Some in which the defects are such that they can be mended are redipped in the same manner as described. Plates that



cannot be mended are reheated in separate pots and passed through rolls which squeeze off the heavy coating and turn the plates into ordinary grades, which are used for various purposes other than roofing. It is the aim of the American Tin Plate Company to induce all consumers to use only first-class high grades of terne plates for roofing, and for that reason no wasters or seconds of the high grades are placed on the market.

### The Engineering Building.

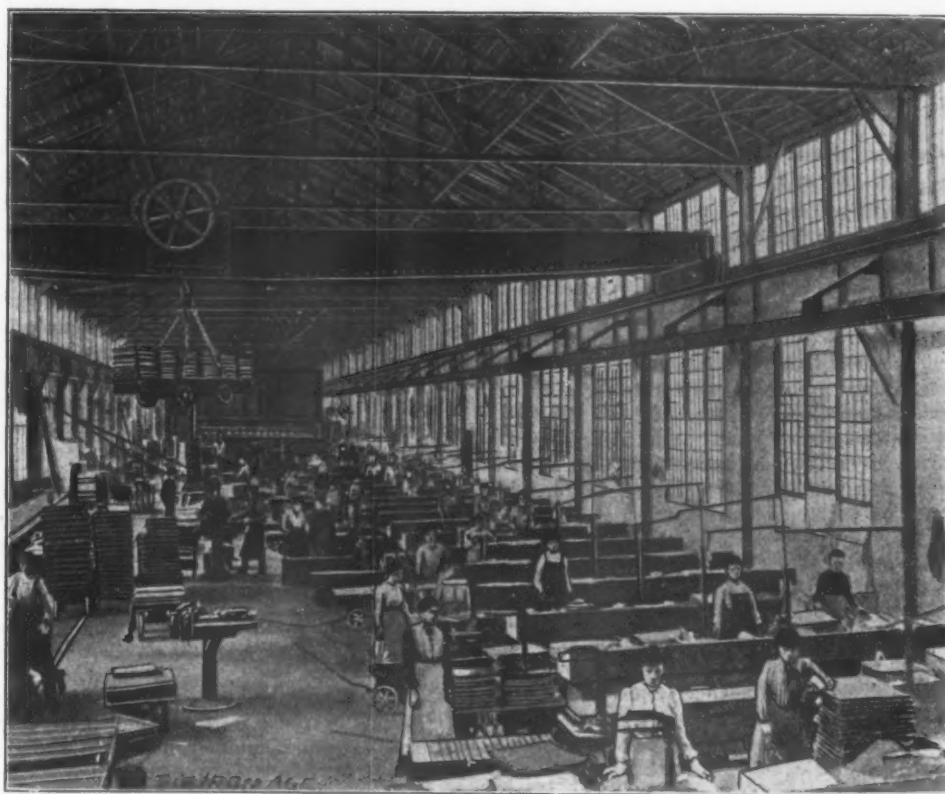
A meeting of the representatives of the five organizations named by Andrew Carnegie, in his proposition to give to the four national engineering societies and the Engineers' Club a building for their joint use and occupancy, was held on May 15. There were present on behalf of the American Society of Civil Engineers Alfred Noble, president, W. J. Wilgus and G. H. Pegram; on behalf of the American Institute of Electrical Engineers, C.

ninth street and south side of Fortieth street, west of Fifth avenue, in the City of New York, in the State of New York.

"*And Resolved further*, That (insert name of organization) has a very high appreciation of this generous gift of Andrew Carnegie and this additional evidence of his recognition of the engineering profession and his deep interest in the welfare of the national societies of engineers and the Engineers' Club.

"*And Resolved further*, That a site on the north side of Thirty-ninth street shall be purchased and held by trustees, or otherwise, as shall be determined by the joint committee hereinafter mentioned for the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the American Institute of Mining Engineers, or by such of them as shall vote in favor of coming into this enterprise.

"*And Resolved further*, That a joint committee shall



Assorting Terne Plates at the Laughlin Tin Plate Works.

### THE INCREASING USE OF TERNE PLATES FOR ROOFING.

F. Scott, president, and T. C. Martin; on behalf of the American Society of Mechanical Engineers, J. M. Dodge, president, Charles Wallace Hunt and F. R. Hutton; on behalf of the Institute of Mining Engineers, A. R. Ledoux, president, T. Dwight and C. Kirchhoff; on behalf of the Engineers' Club, J. C. Kafer, president, W. A. Redding and W. H. Fletcher. The meeting was called to order by President Kafer of the Engineers' Club, and on motion Charles F. Scott, president of the Institute of Electrical Engineers, was elected chairman of the meeting, and F. R. Hutton, secretary. After a full and harmonious discussion the meeting passed the accompanying resolutions:

*Resolved*, That this Joint Conference Committee recommend to the respective governing bodies represented at this conference that the following resolutions be brought before the several organizations to be acted on:

"*Resolved*, That (insert name of organization) unite with (insert the names of the other four organizations) or any of them, for the purpose of accepting the sum of \$1,000,000 as a gift from Andrew Carnegie for the purpose of erecting suitable buildings for occupancy by various societies of engineers and the Engineers' Club, on the sites secured for that purpose on the north side of Thirty-

be created to be composed of three members of each organization that shall unite in accepting said gift of \$1,000,000 from Andrew Carnegie, and that the governing body of (insert name of organization) shall elect three members of this organization to represent it on and be members of such joint committee; and that the governing body of (insert name of organization) shall have the right and power to remove any member of such joint committee who shall be elected by it, and to elect any member of this organization to fill any vacancy that shall occur in such joint committee by reason of the death, resignation, refusal to act or removal of any member who shall have been elected by the governing body of this organization as a member of such joint committee.

"*And Resolved further*, That the character and internal arrangement of the building to be erected on the site of Thirty-ninth street shall be determined upon by the affirmative vote of at least two-thirds of all of such of the members of said joint committee as shall represent all of the organizations, other than the Engineers' Club, on such joint committee; and that the character and internal arrangement of the club building to be erected on the site of Fortieth street shall be determined upon by

the affirmative vote of all of the three members of such joint committee who shall represent the Engineers' Club on such joint committee.

"*And Resolved further*, That said joint committee shall, by the affirmative vote of at least two-thirds of all the members thereof, select and employ an architect to prepare the plans and specifications for the club building to be erected on the site on Thirty-ninth street and for the club building to be erected on the site of Fortieth street, and shall also obtain proposals for the erection of both of such buildings, and shall have power to make and enter into such contract or contracts as shall be approved and authorized by the affirmative vote of at least two-thirds of all the members of said joint committee for the erection of both such buildings, and shall have charge of the erection of both of such buildings.

"*And Resolved further*, That said joint committee shall continue in existence until all of the purpose set forth in these resolutions shall have been fully accomplished."

### The Quality of Pig Iron for Foundry Use as Shown by Fracture and Analysis.\*

BY S. B. PATTERSON, EMPIRE STEEL & IRON COMPANY, ALLENTOWN, PA.

The metal, iron, is one of the most important elements that go to make up this earth. Its characteristics are the same at all times and in all places, and there cannot be poor iron any more than there can be poor gold or poor silver. No absolutely pure iron is produced outside of the laboratory, the nearest approach being the wrought iron of commerce. What we will consider to-day—viz.: pig iron—is not iron at all, strictly speaking, but an alloy of which iron is the chief component. It is not a simple mechanical mixture of a few substances, such as brass is, or bell metal or German silver, but a complex union of a large number of varying elements. It differs, too, in this respect, the component parts of these alloys can be so proportioned as to control the product absolutely, while only partial, intermittent and variable control can be exercised over the process in the manufacture of pig iron. Iron, as a name for this complex compound, and at the same time for its chief constituent, is a misnomer, which, like other incorrect and inexact terms, is apt to lead to illogical reasoning and erroneous conclusions. The tendency to confusion is, however, somewhat reduced by prefixing the rather inelegant adjective "pig." The error in the system of nomenclature is emphasized by our having given the name "steel" to an intermediate product running in composition from a close approach to pig iron almost to wrought iron. But we are not posing as a philologist and will leave the correction of the language to our academical brethren.

The phenomenal advances made in the manufacture of iron during the past 40 years have been made possible to a large extent by the great progress made in chemistry. The most important adjunct of the blast furnace to-day is the laboratory, and the majority of our most progressive and successful furnace superintendents are its graduates. As a type of this class, James Gayley comes at once to our minds, and it is with pleasure that we add the name of the president of the Empire Steel & Iron Company, Leonard Peckitt. It is interesting to note that both these gentlemen passed a portion of their apprenticeship with the pioneer anthracite furnaces in America, the Crane Iron Works, at Catasauqua, Pa. One could almost as well operate a blast furnace without a blowing engine as without a laboratory.

The science of chemistry is only on its threshold. "A little knowledge is," sometimes, "a dangerous thing," and wrong conclusions are often deduced owing to an improper understanding or application of the data at hand. To illustrate: A foundryman learns that silicon in pig iron makes soft castings, and based on the maxim that you cannot have too much of a good thing, uses very

high silicon irons, only to find to his disgust that he has a lot of castings on hand too hard to use. Rules galore instructing us how much of this and that element are required for all shapes, kinds, sizes and conditions of castings, very much on the order of cook book recipes, are constantly making their appearance. They are of no value. The housewife has to do with mechanical mixtures, while we are concerned with intricate chemical combinations. There is no analogy between the pastry cook's art and the iron founder's. We must realize not only the great number of metals and metalloids to be found in our alloy, but that they combine with each other as well as with the iron; that the new compounds thus formed have characteristics differing from those of either component, and that the influence of an element may be increased, lessened or neutralized in the presence of another. The authors of these formulas specify for each kind of casting the amount there should be of graphite and combined carbon, silicon, manganese and phosphorus between certain limits, with an upper limit to sulphur. But they make the maximum and minimum so far apart (a wise precaution) as to make the rules too broad to be of much if any value. If an attempt at exactness is made they are equally without value, for reasons already explained. One author considered only the ratio of the graphite to the combined carbon, accepting iron with almost any silicon per cent. the furnaceman might send. Then we had a class whose fad was the silicon contents only, and I have known of a few cases where manganese was considered the sole mainstay of good castings.

Let us now consider those influences exerted by the ordinary elements to be found in pig iron which are generally accepted as established. I consider that carbon and silicon are the essential constituents of foundry pig iron. The remaining ordinary elements are manganese, sulphur, phosphorus and titanium. At times and in small quantities are found a portion of all the following: Copper, arsenic, calcium, magnesium, vanadium, and occasionally other rare metals.

#### Carbon in Pig Iron.

Carbon in pig iron occurs in two forms, in the graphitic and in the combined state. In the former case it is mechanically mixed. All the other elements of our alloy are chemically combined. Some scientists claim that there are others forms of carbon in iron, but as the matter is still in the cloudy realms of speculation we will not consider them.

Carbon makes pig iron fluid, thus differentiating it from wrought iron. When graphitic it conduces to soft castings. When combined it makes them hard. The fracture of pig iron is a crude indication of the ratio of the graphitic to the combined carbon; No. 2 X and No. 2 plain iron having nearly all the carbon in the graphitic state, gray forge having less graphite and more combined carbon, and so on down the grades until we reach pure white iron, in which the carbon is practically combined. Therefore, the fracture is a sufficiently close guide in selecting ordinary pig iron as to the relative contents of the two forms of carbon. Silver gray iron has an appearance of its own too familiar to need description and is outside the category of ordinary pig iron when it comes to the appearance of its fracture. To show one of the misconceptions of the past such iron was called carbonized or burnt iron in my youthful days, while we know now that it is a siliconized iron. Now it commands a premium, then it was almost unsalable.

The amount of total carbon in pig iron is fairly constant, being generally within the limits of 3.25 and 4 per cent.

#### Silicon in Pig Iron.

Silicon and carbon, as before stated, give foundry iron its essential characteristics. Were the remaining elements absent these characteristics would still be preserved. The effect of silicon in itself is to make iron hard, and yet it serves admirably to make soft castings. I believe a correct explanation of this seeming paradox to be as follows: On melting pig iron and on remelting cast iron there is a marked tendency in the graphitic carbon to go into the combined state, the amount so changing being dependent on certain conditions. This increase of the combined carbon increases the hardness of the casting.

\* A paper read before the New England Foundrymen's Association.



Silicon diminishes this tendency of carbon to change its condition, thus keeping the graphite more nearly to its original proportion, and therefore preserving the quality of softness. The scientific phraseology, as I understand it, is that silicon diminishes the solvent power of molten iron for carbon. I presume another way to put it is that combined carbon produces a greater degree of hardness than an equal amount of silicon, and the silicon having the greater affinity for the iron prevents an equivalent amount of carbon going into combination with it. Silicon thus secures softness by preventing the formation of the more efficient hardening agent, combined carbon. Having a sufficiency of silicon to produce a soft casting, any excess causes hardness.

The claim has been made for many years that silicon produces graphitic carbon—i.e., causes carbon on the remelting of iron to pass from the combined to the graphitic condition—and cases have been instanced where good castings have been made from all scrap iron or from very inferior grades of pig iron by the use of high silicon compounds. But if such be the fact, does it not seem strange that intelligent foundrymen continue buying the higher priced foundry grades when cheap mottled and white irons would do as well? I am sure there are other ironmasters than your humble servant who would like to see openings for these off grades other than the furnace top. The action of the blast in the cupola oxidizes a small portion of the carbon and of the silicon. *Per contra*, the iron absorbs carbon from the fuel, sometimes sufficient to more than offset the loss by oxidation. Not so with silicon, which diminishes at every melting.

#### Manganese in Pig Iron.

Manganese is a beneficial element in pig iron to a certain limit, serving two functions. It eliminates some sulphur, whether the sulphur is inherent in the iron or absorbed from the fuel during melting. It also acts as a bulwark to the silicon, diminishing the amount of wastage during melting. The explanation is that manganese, like silicon, oxidizes at the temperature of melting iron, thus dividing the action of the blast in the cupola.

The invention, or more properly the discovery, of the pneumatic process of making steel gave a wonderful impetus to metallurgical chemistry. As an epoch making event it ranks in the industrial world with the discovery of America by Columbus in history. In the manufacture of iron and steel it led mankind from the dusk of empiricism to the light of scientific knowledge. Let us refer to the Bessemer process for enlightenment on our thesis.

It is known that blowing air through molten iron in the Bessemer converter immediately starts the oxidation of the manganese, which is followed very closely by the burning out of the silicon, both elements being soon eliminated. At the end of this first period, which lasts from eight to ten minutes, the temperature not having been sufficiently high, no diminution of the total carbon takes place, but there is found to be an almost complete conversion of the carbon from the graphitic to the combined state. Please note that this change takes place immediately after the disappearance of the silicon, which fact seems to me to be proof in a negative form of my previous statement of the function of silicon in maintaining carbon in the graphitic form.

The action of the blast eliminates the manganese and silicon at a temperature slightly above the melting point of iron. Carbon, however, is not oxidized to any appreciable extent at this temperature, it requiring a much greater intensity of heat to effect its removal. This necessary degree of heat is produced by the rapid combustion of the silicon and manganese, and the disappearance of the carbon therefore follows as a sequence of their elimination. We do not, however, obtain any such increase of temperature in the cupola, because the air is blown over the molten metal and not through it, as in the converter, and the carbon, therefore, is not consumed to any marked extent. In the latter case the action is superficial, the oxidation being slight and incidental, while in the other it is fundamental and complete.

I knew of a brand of iron wherein the manganese content was so small as to be a negligible quantity, never-

theless the iron was used successfully for about every species of casting from stove plate and light bench hardware work at one end of the gamut to water pipe and engine cylinders at the other. The iron was selected in each instance with more silicon than would have been the case with iron containing the ordinary per cent. of manganese. This brand was noted for its low sulphur. Owing to absence of manganese, however, it was more incumbent on the foundryman than usual to use a low sulphur fuel for melting it.

Manganese, like silicon, when in excess causes hardness. This fact is shown in the alloys *spiegeleisen* and *ferromanganese*, both of which are characterized by extreme hardness. The former contains 10 to 30 per cent. and the latter often reaches 80 per cent. manganese.

#### Phosphorus in Pig Iron.

Not much need be said as to phosphorus, as its influence is well understood. It makes iron fluid, so that it flows readily into every intricacy of the mold, taking the most delicate impressions. It also reduces shrinkage. As it causes weakness and brittleness the amount must be kept within bounds. For malleable castings, however, but little phosphorus can be permitted, the limit being slightly above that for Bessemer iron.

#### Sulphur in Pig Iron.

Sulphur remains as a *bête noire* to vex the metallurgical mind. It is the rod of affliction to many a poor ironmaster. It does not seem to have a redeeming quality. In iron it causes hardness, blow holes, weakness and shrinkage. It generally occurs as a sulphide of iron, but not infrequently forms a compound with titanium, and probably with some of the rarer metals which are occasionally found in iron. I particularly call attention to this fact for the reason that the determination of sulphur is generally made in furnace laboratories by the evolution method, which has a popularity owing to the speed and ease with which it is accomplished. It fails, however, to give that portion of the sulphur which is combined with titanium. It is probable that titanium sulphide is innocuous in pig iron, but I am not aware that this matter has ever been determined.

While on the subject of sulphur I will refer to a prevailing theory which I believe to be erroneous. I alluded to it when discussing the influence of silicon. It is that silicon in the cupola increases graphitic carbon by driving some of the combined carbon into the graphitic form, and also that the grayness of cast iron in the blast furnace depends upon the amount of silicon present.

I have made hundreds of tons of iron, the fracture showing a very coarse grain and a very dark color, sufficiently so to grade it as No. 1 or No. 2 X, but in which the silicon contents were less than 1 per cent., sometimes even running below 0.75 per cent. More than one foundry customer has eagerly picked out such iron as being just what he wanted, and was astonished when informed that it would make castings so hard that they could not be drilled. This iron was made for puddling at a rolling mill, where very high grade wrought iron was a specialty. *Per contra*, the same blast furnace with the same materials produced irons gray forge in fracture, but with more than 3 per cent. silicon, and at times even a decided mottled iron with 2 per cent. silicon. Here we have two instances of the exact reverse of the theory—viz.: high graphitic carbon with low silicon and low graphitic carbon with high silicon. Now our analyses showed sulphur down to a mere trace in the low silicon No. 2 X iron and an amount above normal in the high silicon forge and mottled so that sulphur would seem to be a factor to be considered.

These low grade irons were not produced intentionally, but the furnace made them in spite of our efforts to the contrary. It always happened in very hot weather, and when the atmosphere was surcharged with moisture, with a light burden on the furnace, which light burden was carried (but in vain) to secure a better grade of iron. I offer with hesitation the following offhand explanation of this phenomenon, and as a preliminary to a clear understanding will briefly outline the theory of the blast furnace operation. The action of the gases removes the oxygen of the ore, producing a nearly pure

iron, which makes its appearance in a porous or spongy condition just above the zone of fusion. So far we are in the realm of established fact. This iron sponge now absorbs carbon, silicon and other elements going to make pig iron, but as to the exact *modus operandi* and as to the exact place and the exact order of these final processes we can only speculate. With such a multitude of variable and changing conditions, such as the relative proportions, kinds and qualities of materials, speed of operation, temperature and quantity of air blown and the condition of the atmosphere, it is highly probable that the sequence of the absorption of the various elements and the intensity of the various actions are subject to continual change. The discordant results often obtained from a blast furnace can only be explained on such hypotheses.

It takes somewhere about 200,000 cubic feet of air to make a ton of pig iron. The amount of water carried into a furnace on a hot muggy day must, therefore, be no inconsiderable quantity. A gentleman who operated a small furnace told me that he had made calculations showing that the weight of water driven in on some such extreme day was greater than the tonnage of iron made. The decomposition of this water must very materially reduce the temperature of the furnace hearth, which means low graphitic and high combined carbon, and also high sulphur. But since the furnace carried a very light burden the higher zone may be very hot, so that we can imagine the reduction of the silica and the absorption of the silicon by the iron sponge taking place in such upper hot zone. This sponge, now impregnated with carbon and silicon, descends into the zone of fusion, the temperature of which, and of the hearth beneath, is below normal, for the reason just given. In consequence of this comparatively low temperature a lesser portion of the carbon becomes graphitic, and the iron absorbs, or perhaps we may more correctly say retains, more sulphur than it would have done with a hotter furnace hearth. To my mind the ratio between the graphitic and combined carbon is not so much a function of the silicon as of the temperature of the furnace hearth.

#### **Titanium in Pig Iron.**

Titanium, the last named of the ordinary elements of our alloy, is one about whose influence there is much misconception. In my business experience I have had instances, and have heard of them, where bad castings were attributed to titanium in pig iron. But I do not know of a single authenticated case which showed such claim to have any foundation. The real victim of this element is the furnace manager, not the foundryman. Titanic acid occurs in almost every iron ore, and it impregnates some magnetites to such an extent as to render them valueless, in the present state of our art. There are many million tons of such ores in the Adirondacks. Most of the titanic acid goes into the furnace slag, and being very difficult of fusion, a sticky cinder results, which obstructs the tuyere openings, and being cumulative, gradually builds up the crucible. Our experience with titaniferous ores has been in the past, when blast temperatures were very much lower than now. Then ores were rarely judged by chemical analysis, and consequently titanic acid would only be discovered by its injurious effects on the working of the furnace.

I remember hearing of the experience of one of the old fashioned furnace founders in the days when those functionaries went about their duties with closed mouths and wise looks, and were supposed to be the custodians of certain maxims too profound and too valuable to be imparted to their fellow men. Owing to the closing up of the furnace hearth, recourse was had by the furnace owners to a chemical examination of the materials used, when it was found that one ore contained a large per cent. of titanic acid. By leaving off this ore the furnace was saved, but always after that our metallurgical Solomon was certain that any bad working of the furnace was due to some more of that "damned botanic acid."

It is possible that, with our high blast temperatures and consequent hot furnace hearths, the slag from ores containing a moderate amount of titanic acid could be rendered sufficiently fluid to flow through the cinder

notch, but while the supply of ores free from this substance is abundant, no one seems sufficiently interested to try the experiment. But very little titanium goes into the iron, and I have never seen any proof that this little produced an injurious effect. On the contrary, I do believe it imparts strength. Prof. Porter W. Shimer states that he has always found some titanium in pig iron, the range of his analyses showing it from 0.05 to 0.40 per cent.

#### **Rules to Guide in Selection of Iron.**

Open hearth and Bessemer steel mills can only be operated with the aid of the laboratory, and they necessarily purchase their pig iron on full and explicit chemical specifications. Requisitions of such kind are welcomed by the progressive furnacemen. But there are many foundries not in a position to operate a laboratory. By what simple rules can they be guided in selecting their irons? Most blast furnaces are run on pretty constant and uniform assortments of raw materials, when making any particular kind of iron, be it foundry, mill or basic open hearth. Under such uniform conditions the phosphorus is bound to be constant, as all that is in the raw materials goes into the iron. The manganese will vary more, as some goes into the iron and some into the slag, but the variations will not be sufficient to affect the castings. Silicon and sulphur are the variable elements, the former to the greater extent. For this reason all furnace companies do, or should, analyze each cast for these elements. Now let the foundryman ascertain the usual per cents. of phosphorus and manganese to be expected in the iron he purchases. Should these be changed at any time by a change in the raw materials, the furnaceman should inform his customer. The fracture shows the ratio of the graphitic to combined carbon sufficiently near for all practical purposes. Finally, with the silicon and sulphur contents given, the foundryman has all necessary data to make a start. Owing to the endless variety of sizes and shapes of patterns, and the very many qualities sought for in castings, some experimenting will be necessary before obtaining the end desired. By getting his data and working out his conclusions in advance of operations he will be able more quickly, economically and satisfactorily to reach his goal than by any hit or miss method.

I am inclined to think that the smaller foundries often use too many kinds of iron. The disadvantage in so doing is that in the event of the need of checking up the analysis of the pig irons the time required and expense incurred are thereby increased, as well as the difficulty of locating the trouble. It is seldom necessary to go beyond two brands to get a desirable mixture.

#### **Responsibility of the Foundryman.**

The pig iron manufacturer gets no guarantee as to furnace results from the purveyors of his raw materials. He ascertains the analyses of his fuels, of his iron ores and their physical condition and the analyses of his flux. With these data and with a knowledge of his conditions of manufacture he must deduce the proper mixture for his furnace, and the proper way to run it. So with the foundryman. A conscientious furnaceman will furnish an honest analysis of his pig iron. If he is a wise man he will not assume the ability to advise his customer how to select, how to mix and how to melt his iron to get specified results. He should decline such a task, knowing full well that the man who operates the foundry cannot do it successfully on the judgment of another. The foundryman is on the ground, he has all the data, and it is up to him to get the proper results. He must do as the furnaceman does, learn the general laws applying to his materials and processes, make a study of his particular conditions, and then work out his own salvation.

Permit me in closing to make a plea for the furnace manager. He cannot drop his cupola bottom at 6 p.m. and feel that his tasks and troubles have ceased for 12 hours at least. He has to run a continuous performance without a drop of the curtain or an intermission from the day he lights until he blows out, or the furnace goes out in spite of him. Do not attribute your defective castings to poor iron without having made a careful investigation and having ascertained the facts. Remem-



ber that the pig iron is but one factor in the problem. There are cokes and cokes, and coals and coals, some containing a large percentage of sulphur, which is sure to deteriorate your castings. I have known foundrymen who used no flux and whose product in consequence would acquire additional sulphur from normal and even low sulphur fuels. The manner of charging the cupola and the position of the tuyeres have their influence. Years ago, to facilitate puddling a preliminary process called "fining" was in vogue. It consisted in playing a sharp blast of air upon the surface of molten iron with sufficient force to agitate the metal, thus burning out a portion of the carbon and silicon. This preparation made the subsequent puddling operation shorter and easier. I can imagine tuyeres in a cupola so placed as to fine iron, thus increasing its hardness.

The quality of castings is also affected by the condition of the molding sand, the manner of pouring and the form of the patterns. It is probable that defective castings are sometimes caused by the use of too much rusty or burnt scrap iron. Both kinds are iron partially oxidized, which condition is not changed by remelting except that a portion of the iron oxide may be fluxed off by silica furnished by the sand on the pig iron, dirt with the scrap, or the ash of the fuel. The cupola does not materially change the character of the iron melted, its function being merely to render it fluid so that it can be put into specific forms. The blast furnace, on the contrary, is the instrument used to effect a result by means of numerous and complex chemical actions and reactions. An iron ore is essentially an iron oxide with the gangue as an accident, and the function of the furnace is to deoxidize the ore, remove the gangue, impregnate the wrought iron sponge with the silicon and carbon needed to make it cast iron and to melt the product. It can as readily or more readily deoxidize rusty and burnt scrap as it can the ores nature furnishes and make therefrom fully as good pig iron.

Do not understand me as belittling the cares of the foundryman. He has them in plenty. His is an exacting vocation filled with much detail, requiring unrelenting care and patience, and one confronted with many difficult problems. Your guild and ours are kindred professions, and we can lighten each other's pathway by frank intercourse, honorable and honest dealings, and a mutual regard and respect.

In speaking on the subject of the third rail for high speed electric service before the Western Society of Engineers, Ernest Gonzebach said: "The conductor rail is usually of a standard T rail cross section, but is rolled from a grade of steel containing a very small amount of carbon and manganese. For a resistance in the conductor rail of seven and five-tenths times that of copper of equal cross section, the steel companies supply a rail containing about twelve-hundredths of 1 per cent. of carbon and fourteen-hundredths to fifteen-hundredths of 1 per cent. of manganese. The standard mixtures used in rolling service rails for steam and electric railroads contain very much higher percentages of both carbon and manganese, and their conductivity is usually about one-twelfth that of copper of equal cross section. It is therefore apparent that the value of steel rails for use as electrical conductors depends not so much on the price per ton as on the conductivity. As a general rule it may be stated that old rails sold as relayers will usually net enough cash to buy the low carbon rail of equal conductivity, and leave a cash balance besides."

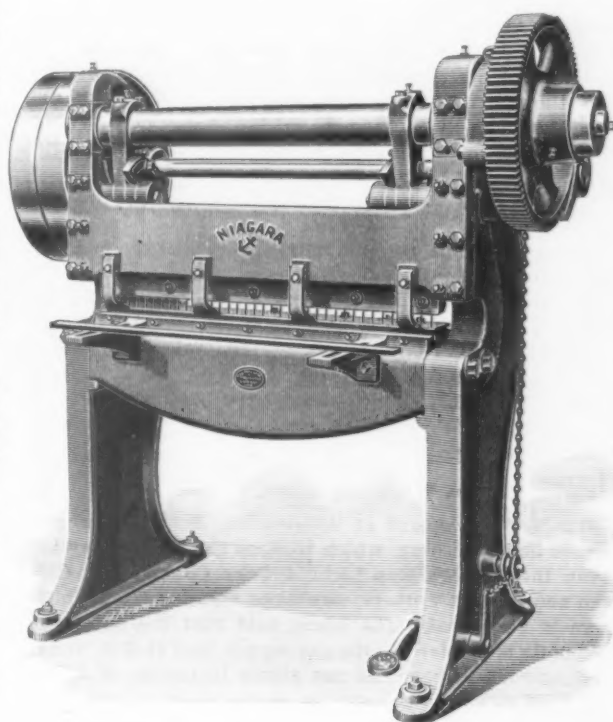
The annual convention of the Tube Workers of America was in session in Pittsburgh, Pa., last week. About 100 delegates were present from 22 tube mills located in different parts of the country, as far east as Boston and as far west as St. Louis. Officers of this organization are as follows: Henry Sabel, president, Washington, Pa.; William J. Cunningham, first vice-president, Boston, Mass.; George Duesboro, second vice-president, Washington, Pa.; Alexandre Frazier, third vice-president, Kewanee, Ill., and John B. McDonough, secretary-treasurer, Reading, Pa. The following trustees were appointed for the ensuing year: George Allhouse, George H. Rogers and

William Plunkett. The convention was held for the purpose of discussing several important matters relating to wages and hours of tube workers, more especially hours of labor, and it is said a movement is on foot to adopt a uniform eight-hour schedule.

### The Niagara Power Gang Punch.

The new power gang punch built by the Niagara Machine & Tool Works of Buffalo, N. Y., is mainly intended for punching rows of holes along the edges of sheets. The uprights have a gap to permit punching holes up to 1½ inches from the edge in sheets of any length at successive strokes. The capacity is 30 holes ¼ inch diameter through No. 12 gauge iron or equivalent.

The driving mechanism is overhead, to keep it free from punchings and scale. The slide is adjustable ½ inch, the adjustment being indicated on a graduated scale. The pressure is transmitted from the shaft through solid metal. The back gears are machine cut, and the motion is controlled by a positive clutch, which causes the slide to stop at the highest point after every



THE NIAGARA POWER GANG PUNCH.

stroke, unless the treadle is kept depressed. The wearing surfaces are large, and adjustment is provided for wear.

As a rule it is made with the punches and dies held in fixed positions in suitable plates, which are fastened to the bed and slide in such manner that they can be easily removed to permit of substituting others for holes of different size and location. This method avoids loss of time and possible errors in setting the dies. Provision is made that broken punches can be quickly replaced. The dies have strippers, and brackets are attached to the frame of the machine to support the sheets.

The New York Herald for May 17 publishes a tabulated list of Andrew Carnegie's gifts to cities, towns and institutions up to his departure for Europe on April 24. The total is \$90,912,223. Pittsburgh and Allegheny have received \$19,193,000, Scotland was favored with \$17,713,750, Holland \$1,750,000, England and Wales \$1,354,500, Canada \$1,016,500, Ireland \$315,000 and Cuba \$252,000. The total distribution in the United States is put at \$68,517,472. Every dollar thus paid out by Mr. Carnegie has been for the improvement of his fellow man, either mentally or physically, but very little has gone direct to charitable institutions. He does not believe in supporting paupers or dependents.

### The Chicago Labor Outlook.

While mutual concessions have resulted in the settlement of some labor strikes during the week, the general temper of the workers is still in an inflamed condition, with daily evidences that the strike epidemic has not yet reached its crucial point. In some lines, like the inside bridge workers, the men apparently scarcely know their own minds, and seemingly they would favor a strike under any circumstances and would make a cause, such as recognition of the union, if no other were available. With this spirit abroad concessions by employers at the present time would result in little progress toward industrial peace.

#### Blacksmiths' Helpers.

The differences, on the wage scale, between the blacksmiths' helpers and the employers, which were referred to arbitration, seem likely to result in a strike, as the union has refused to indorse the settlement arranged by the Arbitration Committee.

#### Contention with Machinists.

The Arbitration Committee appointed by the International Association of Machinists and by the Chicago Metal Trades Association are still wrestling with the questions of discrimination between union and nonunion men, the restriction of output and the proportion of apprentices. It will be remembered that the nine-hour day already has been granted to machinists, blacksmiths' helpers and sheet metal workers.

#### Harvester Employees Resume Work.

A settlement has been arranged by which the striking employees of the Deering Harvester Company resumed work on May 8. By the terms of settlement all strikers, including F. C. Franckle, have been reinstated. No discrimination will be exercised against union employees, and the questions of hours and wages will be submitted to an arbitration committee consisting of officials of the company and the Executive Board of the Chicago Federation of Labor.

#### Gas Workers' Strike Settled.

The Chicago Board of Arbitration, composed of employers and teamsters, which took up the controversy between the People's Gas Light & Coke Company of Chicago and the gas workers, has made a ruling from which there is no appeal. The board held that the safety of the public is involved in the gas supply, and that it would be dangerous to have the gas plants in charge of a collection of men who are subject to the absolute orders of a leader who will not have the general good of the public at heart. The board further decided that the recent strike against the gas company did not reflect credit upon the Chicago Federation of Labor, and especially condemned Organizer J. J. Fitzpatrick of the Chicago Federation of Labor and President Lavery of the Gas Workers' Union. After finding that the men who left the employ of the company prior to February 2 are not to be reinstated, and that all other strikers who walked out subsequent to that date shall be reinstated if the positions they held have not been filled, or if they have not been found guilty of any improper conduct, the report concludes as follows:

While we have decided that the gas company shall to the fullest extent consistent with the safety of the public not discriminate against union men, we feel that the maintenance of the gas pressure is at all times vitally necessary to the protection of the city against crime, and the health of the public, because a fall in the pressure below a certain point on any night is sure to be accompanied by a great loss of life through the extinguishing of gas jets, and, consequently, escape of gas into sleeping rooms.

We believe it to be necessary beyond the possibility of failure that that supply and pressure be under all circumstances maintained. In the light of past experience we believe that should the gas houses be in the entire charge of any collection of men who are subject to the absolute orders of some leader, who may not have the general good of the public at heart, or who may be

guided by personal or vicious motives, very serious trouble would be sure to occur.

We, therefore, believe that it is entirely inexpedient for the company to permit such a possible condition to prevail in the operating of its gas houses.

**The Eastern Bridge & Structural Company.**—The Eastern Bridge & Structural Company of Worcester, Mass., have taken a contract from a Spanish syndicate for the construction of a modern brick making plant at Madrid. Two buildings, entirely of steel, will be erected, one covering 18,000, the other 9000 square feet. The larger structure will be open at the sides, the steel roof being supported by four lines of columns, upon which will rest trusses, each forming a complete span. The smaller building will have heavy side walls, with large arch openings for ventilation. In the larger building will be two lines of kilns, arranged so that the brick may be moved continuously on cars, and constructed with fire proof platforms. It is understood that this will be only the nucleus of the plant, which will be the first in Spain to manufacture brick by machinery. Spanish brick is not like the American article, being larger and thinner, resembling tiles in shape. The steel will be shipped to Spain ready for construction and will be put in place by American workmen, which the Eastern Bridge & Structural Company will send over. The Eastern Bridge & Structural Company have a large amount of business on hand, including a new power station for the Consolidated Lighting Company of Montpelier, Vt.; a number of bridges for the New York, New Haven & Hartford Railroad, and a bridge for the Lake Champlain & Moriah Railroad in the Adirondacks, which carries ore from an iron mine. This bridge is 87 feet long and has two girders weighing 30 tons each. Another bridge contract is for Cienfuegos, Cuba, a seven-span plate girder structure. This order was received on Thursday and the steel was shipped the following Wednesday. Another order is for the iron inside frame for a 52-foot yacht to be built at San Francisco. Other work includes structural steel for Howard Gould's new stable on Long Island, the new town hall at Brookfield, Mass., and the Empire Theatre, New York.

The Government is experimenting upon a certain number of young men in regard to the effect of antiseptics generally used in preserving meats and other food stuffs from decay. At last accounts none of these devotees had succumbed, but were in a normal state of health. The old saying that what is one man's meat is another man's poison holds good as to individuals, and it is surprising to see the effect that natural selection—or training, whichever it may be—of a dietary has upon individuals. The strong men who do arduous work in boat races are very closely watched as regards their food, but Arab porters, without any watching and confined by necessity to what the desert affords, perform prodigious feats of endurance upon potatoes (chiefly starch), and occasionally some corn meal mush. A traveler in the Far East says that he has seen the men who carry brick tea across the desert take a load of 289 pounds on their heads and shoulders over a rough country for three weeks consecutively without complaint, and Arabs are very far from being athletes in appearance at least. The same facts have been noted nearer home in the case of West Indian pottery makers, who bring in from long distances high paniers of stone ware that an ordinarily strong man cannot even lift, much less carry, the load is probably twice the weight of the carrier. The values of certain foods do not appear to be of importance with such evidence as that stated.

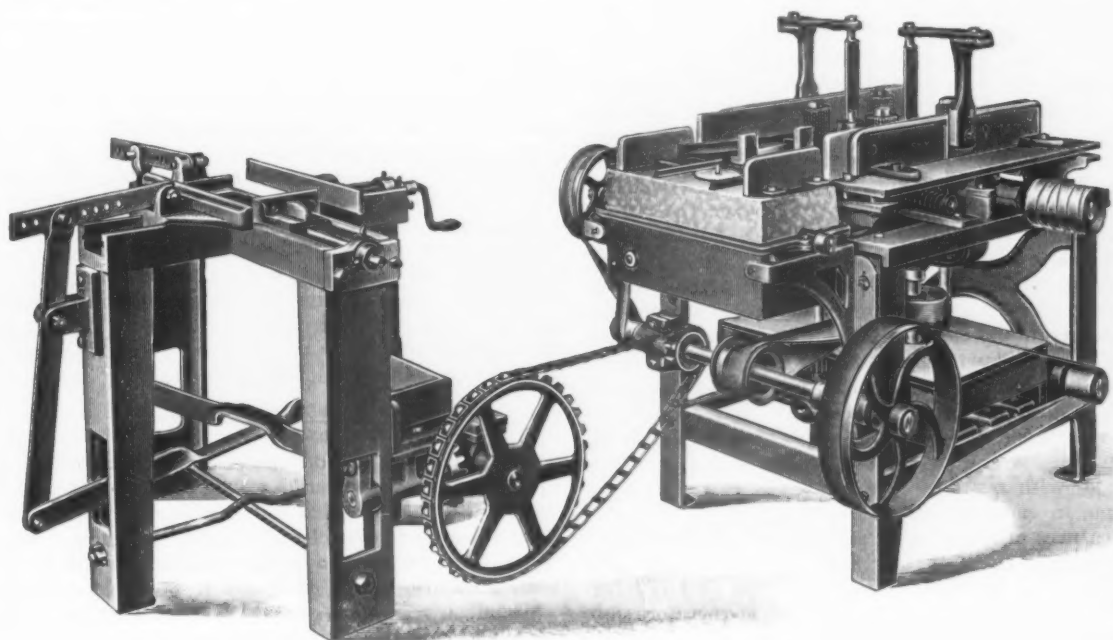
At a meeting held in Pittsburgh last week between officials of the Amalgamated Association of Iron, Steel and Tin Workers and representatives of the American Sheet Steel Company and American Tin Plate Company, the wage rate for tin plate and sheet workers for the next 60 days was fixed on the same basis as in the preceding two months. It was found that the average price of tin plate and sheets for the past two months did not entitle the men to any advance in wages.



### The Chase Power Feed Matcher.

The Chase Turbine Mfg. Company of Orange, Mass., have begun the manufacture of the Chase Improved power feed matcher with glue pot and press combined. These machines are set in train. The purpose is to utilize box stock otherwise too narrow for the purpose by matching two narrow pieces together, and gluing and pressing them to be as strong as a single piece. Box stock is usually 2 inches thick, and the machines are designed primarily for that thickness, although other thicknesses may be handled. The matcher is fitted with 21 circular saws, set in gangs, 11 on one side and 10 on the other. The gauge at the side of the saws is adjustable for any desired thickness of stock. Stock is carried forward by upright toothed feed rolls positive in their movement and controlled by strong coil springs underneath the table. A device holding the stock firmly to the table insures an even cut from each saw the entire length. After leaving the saws the stock receives glue in each cut by means of plain grooved rolls running in glue in the pot at the front of the machine, the grooves in the rolls correspond-

to bring the schedule up to the equivalent of ten hours' pay for a nine-hour day; one and one half time pay for overtime up to midnight and double pay for overtime after midnight and for Sunday and holiday work; overtime for night men to be the same as for day men after they have worked 54 hours a week; one apprentice for the shop and one for each five journeymen, and provision for arbitrating grievances of employees by means of a committee to consist of two members representing the union, two representing the manufacturer and a fifth to be selected by a majority of the four direct representatives. The situation is not considered at all threatening, in spite of the demand. In the first place the Worcester Machinists' Union is not so strong as it was a year ago, when the same demand resulted in a strike, which affected the Prentice Bros. Company and the F. E. Reed Company more than any one else. The union was none too strong in 1902, and its defeat at that time did not tend to increase its popularity among the machinists. Only a small per cent. of the journeymen machinists of the city are members. The meeting which formulated the demand was not a large one, and a large number of those present took no part in the voting. The employ-



THE CHASE POWER FEED MATCHER.

ing to the matching in the pieces as they come from the saws. A device controls the amount of glue furnished to the grooved rolls, the amount being easily regulated by the operator. From the matcher the stock, matched and glued, is placed in the press and firmly brought together, the movable jaws at the side and end bringing the two pieces together with sufficient force to drive them into place. The press may be run continuously, or, by the use of a small clutch, may be made to stop after each revolution. When considerable adjustment is wanted in the press the jaws may be quickly changed by removing the pin in the movable lever and placing it in another hole. When only a slight adjustment is wanted it may be obtained by turning the crank on the screw operating the stationary jaws. When long stock is to be matched continuous feed may be used by removing the two end slides and using the side jaws only. The feed of the matcher is 80 feet a minute and that of the press is 40 strokes a minute.

**The Worcester Machinists.**—The Worcester Machinists' Union served a formal demand upon the employers of Worcester, Mass., May 16, giving until Wednesday, May 20, to make answer. The demand is exactly that of last year, the identical circular being used, the only difference being that the figure 2 in the date is crossed out and the figure 3 substituted. The demand is for a nine-hour day, an advance of 12 per cent. in wages,

ers will make no answer to the demand. The Metal Trades Association, which is strong in Worcester, will undoubtedly handle the situation for the employers, as it did last year, when it was organized for the express purpose of dealing with the strike. The employers are not worrying over the outlook, although it was a surprise to them that the union should think it worth while to make even an attempt this year.

**The Oliver Wire Mill Sold.**—The South Side Works of the American Steel & Wire Company, at Pittsburgh, Pa., formerly operated by the Oliver Wire Company, has been sold to the River & Terminal Railroad Company for a price said to be \$650,000. There are about 4 acres of land in the plot, and title to the property was obtained from the American Steel & Wire Company. The South Side Works was one of the oldest plants operated by the American Steel & Wire Company, and contained two continuous heating furnaces, four trains of rolls, 204 wire nail machines and a modern rod mill. The annual output of the plant was 90,000 gross tons of rods, 150,000 tons of steel wire, ranging from  $\frac{3}{8}$  inch to No. 20 gauge; 31,500 tons of barb wire and fencing specialties and 960,000 kegs of wire nails. It is understood that the River & Terminal Railroad Company are a branch of the Wabash Railroad, and that this line has been steadily buying up property on the South Side with a view of making connection with the elevated road from the Jones & Laugh-

lin Steel Works, which are on the South Side. The railroad will secure possession of the property on June 1, 1904, and in the meantime the equipment in the plant will be removed to other works of the American Steel & Wire Company.

## Department of Commerce and Labor.

### Statistical Work to be Consolidated.

WASHINGTON, D. C., May 19, 1903.—Secretary Cortelyou of the Department of Commerce and Labor has decided to consolidate all the statistical work of the new Department in a single bureau, and to eliminate all unnecessary duplications of work and superfluous published reports. It is a well-known fact that an enormous amount of Government work is duplicated or triplicated by the various statistical bureaus heretofore attached to the several departments, but to be consolidated with the Department of Commerce on July 1. With a view to securing the best possible results in the collection of statistical information of all kinds, Secretary Cortelyou has appointed a commission, the functions of which are outlined in the following letter, which the Secretary has addressed to each member of the commission:

"Section 4 of the act to establish the Department of Commerce and Labor provides that 'the Secretary of Commerce and Labor shall have control of the work of gathering and distributing statistical information naturally relating to the subjects confided to his Department; and the Secretary of Commerce and Labor is hereby given the power and authority to rearrange the statistical work of the bureaus and offices confided to said Department, and to consolidate any of the statistical bureaus and offices transferred to said Department; and said Secretary shall also have authority to call upon other Departments of the Government for statistical data and results obtained by them; and said Secretary of Commerce and Labor may collect, arrange and publish such statistical information so obtained in such manner as to him may seem wise.' I have acquainted the heads of the departments and of the several bureaus and offices concerned with my desire to appoint a commission to assist me in carrying out these provisions of law and other features of the organic act in any way relating to them, and have received their assent to the appointment of the commission in advance of the actual transfer of some of the bureaus and offices. I have therefore appointed the following commission:

Carroll D. Wright, Commissioner of Labor, chairman.  
S. N. D. North, Census Office, vice-chairman.  
James R. Garfield, Commissioner of Corporations.  
O. H. Tittman, Superintendent Coast and Geodetic Survey.  
Geo. M. Bowers, Commissioner of Fish and Fisheries.  
F. P. Sargent, Commissioner-General of Immigration.  
O. P. Austin, Chief of the Bureau of Statistics.  
Frank H. Hitchcock, Chief Clerk Department of Commerce and Labor, secretary.

"It will be the duty of this commission to investigate and report, for the consideration of the Secretary, what rearrangement, by transfer or otherwise, in the work now assigned by law to any of these bureaus and offices will result in an improvement of the service; what field work, if any, now being conducted by any bureaus or offices can be consolidated or dispensed with; what reports, if any, now published, can be consolidated or dispensed with, with a view to the elimination of any duplication now existing in the work of these bureaus; to define clearly the field and functions of each bureau or office in such manner that no one shall encroach at any point upon any other, and generally to make such recommendations as may commend themselves to the commission for the orderly and scientific readjustment of the work of the several bureaus and offices of the Department of Commerce and Labor. The report of the commission may be made from time to time, upon separate branches of the investigation, if desired, but its final report should be submitted at the earliest practicable date. It would greatly facilitate the proper organization of the Department if the commission were to meet at an early date, as it might then be possible to accomplish substantial results before July 1."

Secretary Cortelyou believes that the work of many

of the bureaus which he will take over on July 1 can be so consolidated as to relieve a considerable number of experts of the work they are now doing, which will enable him to assign them to more important duties in connection with the collection of information of special interest to the business community, which he regards as the chief function of the Department. W. L. C.

### The Buckley Car Shops.

Preliminary plans for new car shops to be built and operated at Worcester, Mass., by a corporation with T. H. Buckley at the head, have been completed by Frost, Briggs & Chamberlain of Worcester, architects and engineers. The main car shop will be 66 x 325 feet, one-story high, with monitor roof. In this building the work of general construction of cars, both electric and steam, will be done. It will have four tracks running the entire length of the building, and connected with a spur track from the Boston & Albany Railroad. There will be a boiler house, for two boilers, 25 x 40 feet, and an engine house, 20 x 30 feet. The shipping room, a separate building, will be 30 x 40 feet. All these buildings will be one-story high. They will be of mill construction, with walls almost entirely of glass, with hard pine timber. The floors will be concreted throughout. Mr. Buckley's present shops will be included in the plant. He is a builder of night lunch carts, having been the pioneer in that business. His present shop has about 18,000 feet on its first floor, and this space will be divided between the machine shop, blacksmith shop and room for wood working machinery, the machine shop to occupy about one-half of the space. On the floor above, which is 60 x 100 feet, not covering the entire building, will be located the paint shop for smaller parts of cars. The night lunch cart department will be continued in connection with the car business. A corporation is now forming to operate the business. It is understood that there is ample capital back of the venture.

As to copying the designs and details of machines a prominent manufacturer is of the opinion that it is useless to sue infringers in this direction, for, as often as otherwise, those who claim proprietary rights are themselves infringers or adapters of old ideas, which they are sometimes confronted with when they claim priority. This is the wisdom of the serpent, for long years ago a wise man said there was nothing new under the sun. An engineer conceived the idea of a certain straight way valve, and sent a drawing of it to a technical paper; it was published in due course, and some time after, in looking over a brass manufacturers' catalogue, he came across the identical valve marked "patented." He was foolish enough to call the manufacturers' attention to the previous publication of it, as a bar to their alleged patent, but they replied that they did not care, and would prosecute infringers.

The Keystone Warehouse Company of Buffalo, N. Y., recently incorporated with a capital stock of \$600,000, will let contracts June 1 for the erection of a steel and brick storage and transfer house, 300 feet long, 140 feet wide and seven stories high, at Seneca, Hamburg and Alabama streets, with frontage on three railroads and having direct track connections into the building. The warehouse will be used for the transfer of freight shipped to Buffalo in bulk for distribution to other points and for storage of local shipments and shipments in transit. J. H. Poole of Buffalo is president of the new company, and J. R. Kimball, formerly of Philadelphia, secretary and treasurer.

The Parkersburg Iron & Steel Company of Parkersburg, W. Va., organized by T. G. Williams, now assistant secretary of the company, are manufacturing a full line of sheets. In addition to the ordinary sheets, the company are prepared to furnish polished steel sheets. The process by which the polished sheets are made is one which has just been developed in the works of the company after a long series of experiments. The process followed will very probably be covered by patent.



**George A. Hogg Iron & Steel Foundry Company.**

The George A. Hogg Iron & Steel Foundry Company, manufacturers of rolls, rolling mill machinery and engines, whose present plant is located at Twenty-fourth and Railroad streets, Pittsburgh, have about closed an option for 25 acres of ground at Rosslyn Station, on the Panhandle & Pittsburgh, Chartiers & Youghiogheny railroads, where it is the intention of the concern to build one of the largest and most complete iron and steel foundries and machine shops in the country. Plans for the new works have been completed and bids will be asked in a short time. The present works in Pittsburgh will be dismantled when the new plant is finished, and the best part of the equipment will be removed to the new location. The company have been very much hampered for room in their present plant for several years and have been compelled to turn away a large amount of work which, with better facilities, they could have handled. It is the intention of the works to engage in the building of heavy engines for blast furnace and steel plant duty when the new works are completed. The new buildings will all be of steel frame and brick. Large electric cranes will be installed in the works, the latest pneumatic machinery will be secured and every equipment, even to the smallest detail, will be up to date. The plans for the foundry specify that the building shall be 300 x 450 feet. The general machine shops will be 360 x 500 feet, and, besides these buildings, pattern shops and supply buildings will be built. Negotiations are on at the present time with the Panhandle & Pittsburgh, Chartiers & Youghiogheny railroads for running switches to the works, and in order to do this a new steel bridge across Chartiers creek will be required. It will require about a year for the new plant to be in full working order.

The George A. Hogg Iron & Steel Foundry Company were started in 1840 by Pennock & Hart, and are one of the oldest steel and iron firms in Pittsburgh. Totten & Co. took over the plant in 1863, and in 1889 the Totten & Hogg Iron & Steel Foundry Company purchased the works, which were transferred to the present owners in 1901.

When the new works at Rosslyn are completed the firm will be in a position to build as high as 10 large blast furnace engines at the same time. The company have contracts with several of the constituent companies of the United States Steel Corporation, which extend for four years, whereby they obtain 12½ per cent. of all the roll orders of the American Tin Plate Company, 10 per cent. of the roll contracts of the American Sheet Steel Company, and the company also receive a large amount of rolling machinery business from the United States Steel Corporation.

Plans are being prepared for extensive freight terminal facilities for the Pennsylvania Railroad Company in Buffalo. One feature of the improvement is a canal to run inland from Lake Erie to facilitate the handling of the lake ore trade. The canal will be nearly 1 mile in length and 200 feet in width. One-half the width will be excavated from land owned by the Pennsylvania and one-half from the property of the Buffalo & Susquehanna Iron Company, which adjoins it for the entire length, and the canal will be used jointly by the two companies. The plans contemplate the construction of large ore docks. Work on the canal is to be rushed through with all possible speed.

The Hennepin Securities Company have been incorporated at Albany, N. Y., by Buffalo men acting for a syndicate of London and New York capitalists, and have purchased 3000 acres of land at Niagara Falls on the Canadian side, suitable for factory sites, and are planning to locate a large number of manufacturing concerns on this tract to utilize in part the immense amount of electrical power now being developed on the Canadian side of the river, the aggregate of which will be 375,000 horse-power. It is stated that arrangements have already been made for the location on the tract of several large plants, including a steel plant, which will be on a large scale. The ore for same will be brought down from the

upper lakes to a point near Chippewa, just above the falls, where extensive docks will be built. In addition to the land secured by the syndicate above mentioned, the Ontario Power Company have purchased and optioned a considerable tract in the vicinity of their power plant, which they intend to rent to manufacturing companies who will locate there and use their power, carrying out the same general plan adopted by the Niagara Falls Power Company on the American side.

**Recent Drawback Allowances.**

The Treasury Department has recently issued regulations covering drawbacks in a number of cases, among which are the following:

On the exportation of locomotives manufactured by Burnham, Williams & Co. (Baldwin Locomotive Works) of Philadelphia, Pa., with the use of driving axles, engine truck axles, tender truck axles, connecting rods, piston rods, wrist pins and guides made by the Standard Steel Company of Burnham, Pa., from imported steel blooms, a drawback will be allowed equal in amount to the duty paid on the imported materials used, less the legal deduction of 1 per cent. An allowance shall be made of 4 pounds as unrecoverable waste for every 100 pounds of imported material consumed, and an allowance for valuable waste in proportion to the value of such waste at the time of manufacture and the price paid at the works for the imported material.

On the exportation of butts and hinges manufactured by the Stanley Works of New Britain, Conn., from imported steel billets, a drawback will be allowed equal in amount to the duty paid on the imported material used, less the legal deduction of 1 per cent. The quantity of imported material used shall be determined by adding to the net weight of the exported article the percentage specified in the last column of the following tabular statement:

| Butts.             |                 | Per cent. to add to finished weight to equal weight of imported billets. |
|--------------------|-----------------|--|
| Quality No.        | Size in inches. |  |
| 800 .....          | 2 to 5          | 5.24   |
| 804 and 808 .....  | 2 x 2 to 6 x 6  | 4.3  |
| 814 .....          | 1 to 2½         | 15.2   |
| 816 and 816½ ..... | 1 to 3          | 11.44  |
| 838 and 840 .....  | 1½ to 5         | 1.55   |
| 5000 .....         | 1 to 4          | 15.87  |
| 5140 .....         | 2 to 6          | 28.36  |
| Hinges.            |                 |  |
| 904 .....          | 3 to 10         | 20.00  |
| 906 .....          | 4 to 18         | 19.26  |
| 935 .....          | 4 to 12         | 5.04   |
| 937 .....          | 4 to 10         | 4.29   |

On the exportation of tubular cream separators manufactured by P. M. Sharples of Westchester, Pa., in part from imported pig iron, a drawback will be allowed equal in amount to the duties paid on the imported material used, less the legal deduction of 1 per cent. In liquidation, the quantity of imported pig iron which may be taken as the basis for allowance of drawback may equal the weight of the exported articles, with an addition of not more than 5 per cent. to compensate for nonrecoverable loss. Such allowance shall not exceed the following for the different size separators:

|                                  |                                  |
|----------------------------------|----------------------------------|
| No. 1 separator .....            | 12 pounds imported pig iron.     |
| Nos. 2 and 3 separators .....    | 45 pounds imported pig iron.     |
| Nos. 4, 6 and 9 separators ..... | 72 1-3 pounds imported pig iron. |

There is already a very brisk demand for siloxicon, the new refractory material invented by Edward G. Acheson of Niagara Falls. The manner in which siloxicon has impressed many is significant of the need that is felt for some such material that will withstand high temperatures without melting. The inquiry comes from abroad as well as from the domestic market. Orders are being filled as fast as the temporary installation and its output will permit, but in the near future ground will be broken for a factory that will have an output capacity of quite a few tons a day. Within a few days announcement will be made of the organization of a company with ample capital to establish the industry on a scale sufficient to supply a very large trade.

### The Curtis Steam Turbine.

From letters patent issued in 1896 and 1902 to Charles G. Curtis of New York we take the following data: The first relates to an engine in which the pressure energy of the fluid is converted into the energy of velocity, and is transformed into mechanical power by being directed against rotating vanes. In all successful mechanical combinations of this character it is essential that the relative proportions of all the parts which unite to form the passages through which the steam passes should be maintained. The intention of this invention is the proper governing of the machine in order to insure high efficiency and constant speed under varying loads. The method of governing is based upon the principle that if the volume of the jet of the elastic fluid flowing through a turbine is made to vary, and at the same time the velocity of the jet remain constant, the mechanical power developed will vary

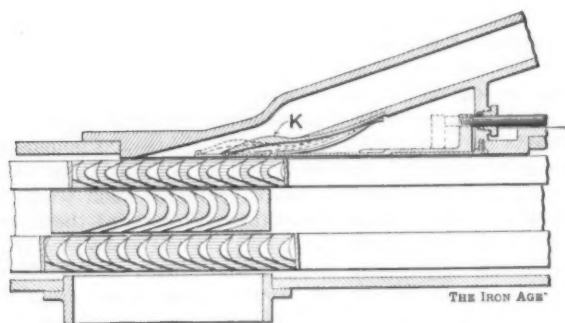


Fig. 1.

as the volume of the jet varies, and therefore the efficiency of the turbine will be substantially the same at all loads. Furthermore, if the volume of the jet is made to vary substantially as the load varies, but the velocity of the jet is constant, the speed of rotation of the turbine will remain constant.

On the other hand, it has been found that if both the velocity and volume of the jet at the point where it strikes the vanes are varied the speed of rotation will vary; or if, under these conditions, the speed of rotation is kept constant a relatively larger volume of jet will be required to maintain this speed of rotation at light than at heavy loads, and in either case there will be a loss in efficiency. Therefore, in this construction the volume of the jet can be varied to any desired extent

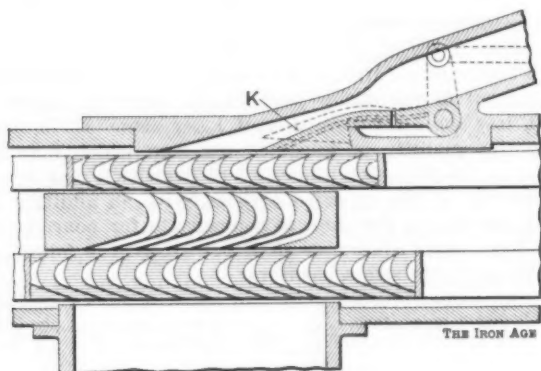


Fig. 2.

without varying its velocity at the point where it acts upon the moving elements of turbine. This is done by maintaining the relative proportions between the parts of the expansion passageway while varying the size of the steam inlet.

As the energy contained in the moving fluid varies as the square of the velocity, a comparatively slight loss of velocity results in a very considerable loss of power. In order that the degree of expansion, and therefore the velocity of the jet, may remain constant at the delivery end under variations in the size of the smaller end, it

is essential that the cross sections of the two ends shall always bear the same proportion. In the first patent referred to above the "expansion" passage is made ad-

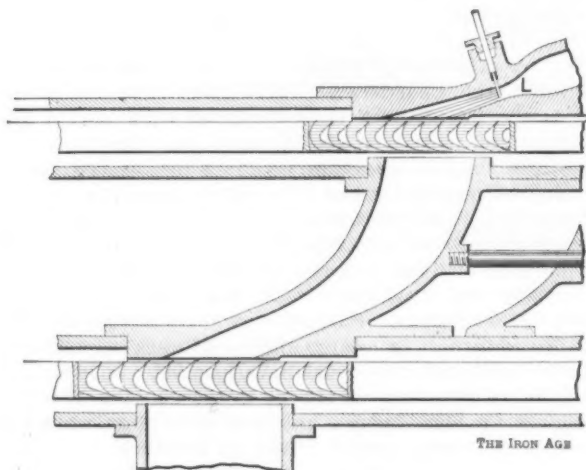


Fig. 3.

justable, so that the cross section of the fluid inlet may be varied and so that every such variation shall be accompanied by simultaneous variations in the other parts of the expansion passage and the proportions between

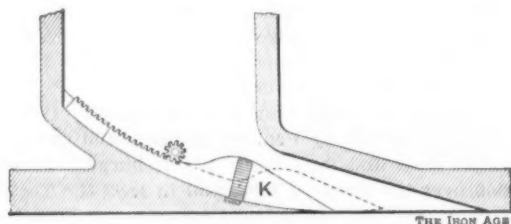


Fig. 4.

them remain constant. The adjustable element may be moved by hand, but of course an automatic adjustment by means of a speed governor or otherwise is necessary

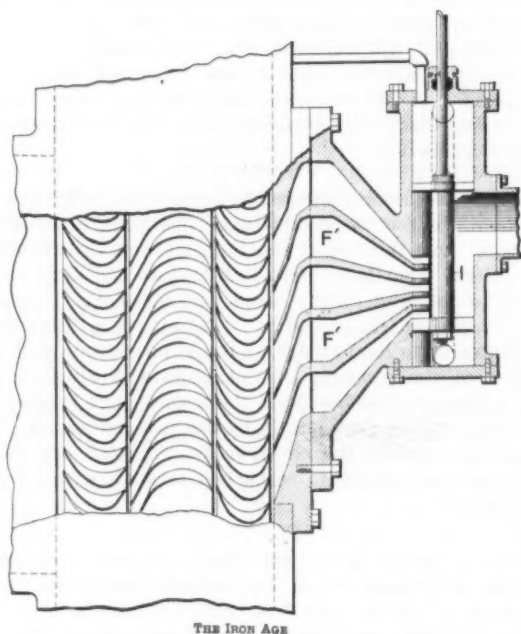


Fig. 5.

### THE CURTIS STEAM TURBINE.

for most purposes. The adjustability may be obtained in different ways. In the case of the diverging form of nozzle one side may be adjustable toward and away from the other side, or both sides may be adjustable toward



and away from each other, or the single nozzle may be divided into a number of separate expanding passages, more or fewer of which may be closed by a movable gate.

In the form shown in Fig. 1 the curved pivoted piece K is held to its seat by a spring and balanced by a steam opening, so that as it is pushed forward it will be turned on its pivot sufficiently to preserve with precision the relations between the receiving and discharging ends of the nozzle. In the construction, Fig. 2, the curved piece K is pivoted at a point sufficiently removed from the nozzle to preserve the proper relation by a pivotal movement of the piece. In Fig. 3 the nozzle is divided into a number of diverging sections by partitions which can be closed by the sliding gate L. In the next form, Fig. 4, the piece K slides on a curved seat and is moved forward and backward by a rack and pinion.

The construction illustrated in the last drawing is covered by the patent of 1902. The nozzle is shown as applied to a compound jet turbine. The nozzle is composed of a number of short sections, F, formed with contracted throats. The passages leading to the throats diverge toward the throats, and also diverge on the other side of the throats. At the extreme outlet the separating walls are so thin that the steam unites into a practically continuous body. Within the valve case is a valve or piston having two heads, which are always on opposite sides of the steam inlet, and therefore balance the valve. By means of the valve the ports may be opened or closed as desired. As shown in the drawing, all the ports are open.

### Trade Publications.

**The Wisdom Calendar.**—The Pratt & Whitney Company, Hartford, Conn., are distributing a desk calendar, which consists of a separate leaf for each day of the year, beginning with May 1, the special feature of which is an extract printed on each leaf from the "Letters from a Self Made Merchant to His Son," by George Horace Lorimer, for which special permission was secured. These extracts have been admirably selected for their wit and wisdom. The block of leaves is attached to a convenient stand.

**Pile Driving Machinery.**—The Vulcan Iron Works of Chicago, in their latest catalogue, describe their pile driving machinery, including fittings, pile saws, drop and steam pile drivers, &c. Their experience in making automatic steam pile drivers extends back to the year 1875, when they manufactured under the Loomis patents, which employed the main features of the old English Nasmyth hammer with an improved valve gear. The success of this hammer led to an improved form under the patents of T. M. Skinner, in which the number of parts was greatly reduced and the valve actuated by steam. The present hammer, known as the Warrington, has been successful from the start. This is a simple and thoroughly reliable machine, easy of operation and free from vexatious breakdowns. Any kind of pile can be used, hard or soft, straight or crooked, and driven without injury to the head of the pile in the hardest kind of driving. The most ordinary kind of timber can thus be driven without the use of bands. The hammer is operated by being raised in the leaders and allowed to rest its full weight on the pile. Steam is turned on and the hammer pounds automatically until the pile has been driven to the required depth.

**Steam Shovels.**—The Vulcan Iron Works Company of Toledo, Ohio, have designed a new 75-ton boom steam shovel which they term Giant B. The shovel is especially adapted to railroad contractors' use, and may be used for all kinds of grading, especially cutting down heavy grades and embankments, loading broken stone or blasted rock. It will handle any ordinary material at the rate of from 2000 to 2500 cubic yards per day of ten hours, and carries its own propelling power. The dipper will reach 27 feet out from the center of the car and will dig a through cut 58 feet wide in 12-foot face and 35 feet wide on the bottom. It will dump 26 feet out from the center on either side and has a clear lift of 14 feet with the dipper door open. The company have also prepared a pamphlet describing their "Baby Giant," which carries a dipper having a capacity of  $\frac{5}{8}$  cubic yard.

**Tapping Machines.**—We have received a circular from the St. Louis Machine Tool Company of St. Louis, Mo., describing their tapping machines. This machine is so constructed that the operator has every facility for handling the work rapidly. As the work is brought up to the tap by the foot treadle he has both hands free to handle and hold it firmly. As the platen stem works in a long sleeve the work comes up to the tap true, insuring true holes and avoiding breakage of taps. The platen is operated by a gear engaging in a rack cut in the platen stem, which is counterbal-

anced by a weight. The circular also describes a reversing tapping chuck made by the same company.

**Presses and Shears.**—A catalogue by the Reserve Press Company of Cleveland, Ohio, describes their several types of open back, straight and inclinable presses, punches and shears, drop hammers, rotary slitting shears, &c. Their improved power bail forming machine is designed for forming wire bails with or without wooden handles. By removing the bail forming jaws or fixtures other forming dies for special shapes can be operated on this machine, making it desirable for many kinds of forming purposes where a long stroke is required. Bails can be formed into shape as fast as the operator can drop the wires into position. There is an advantage in saving of labor over the old method of forming bails of anywhere from 75 to 90 per cent., and also of obtaining a bail which is always uniform as to size and shape. The wires are first straightened and cut the proper lengths, then inserted into the wooden handle and dropped into a suitable receptacle having adjustable gauges. The bail is then formed complete with only one stroke of the plunger.

**Saw Mill Machinery.**—A catalogue by the Wheland Machine Works of Chattanooga, Tenn., deals with their various types of saw mill machinery. Their steam cut off saw is intended principally for cutting long timber, shingle bolts, &c., and can be successfully used in all cases where any other style of cut off saw is employed in a saw mill. For actuating the saw vertically a steam cylinder is used, which has a valve so constructed as to cushion the piston on steam at both ends, this permitting it to be worked very rapidly without jar or concussion under any ordinary steam pressure. The machine is always under perfect control of the operator, and can be stopped at any point of the stroke. The valve is operated by means of a foot treadle and lever with suitable connections. The piston is attached direct to the lower end of the saw frame. A heavy cast iron yoke frame, with self lubricating arbor boxes, furnishes substantial bearings for the saw arbor. These machines are made in three sizes, carrying saws from 39 to 60 inches in diameter.

**Tool Steel.**—A pamphlet by the Vulcan Crucible Steel Company of Aliquippa, Pa., describes their high grade tool steel. The art of making fine tool steel has two prime requisites—viz., the use of the best raw material and the highest skill in metallurgy. In making this steel only the best iron is used, and the company buy no outside scrap, the result being a uniformity which is absolutely essential in reliable tool steel. The process employed insures a low phosphorus, low sulphur steel of a tough, mild nature, with a dense structure and a fine grain, which is singularly free from seams and pipes and which hardens at a low heat.

A pamphlet has been received from J. M. Kline of Beavertown, Pa., describing his hydraulic rams. These rams are designed to work on lower falls than those of the old type and to raise water to a greater height. They will operate on falls of water from 12 to 18 inches or more.

A very complete catalogue has been received from the Coffin Valve Company of Boston, Mass., describing their sluice valves and operating mechanism.

**The Colonial Steel Company.**—Chas. M. Brown, secretary and treasurer of the Colonial Steel Company, manufacturers of crucible and open hearth steel, of Pittsburgh, Pa., states that there is no foundation for the reports that negotiations are still pending for the purchase of the company's plants by the Crucible Steel Company of America. He states that no negotiations of any kind are pending.

The automobile business in this country has increased greatly in the last three years. A writer in *Munsey's Magazine* says that in 1900 there were only about 800 machines built in this country at a net value of \$800,000; in 1901 the output had increased to 3000 machines, the gross value being \$2,400,000; in 1902 the automobiles made in this country numbered 8000, valued at \$6,800,000, while the estimate for this year is between 28,000 and 30,000 machines, worth in round figures \$26,000,000. The writer alluded to makes a strong protest against adverse regulations and legislation against this class of vehicles, and asserts that the owners of them have just as much right to the use of the highway as other citizens. This is not disputed as to the occupation of the roads for business or pleasure; it is the abuse of it which has created universal protest. Racing horses in the public streets is not permitted and there is no reason why automobiles should claim privileges in this direction. In small towns individuals who run automobiles are exceedingly reckless and need stringent enactments to keep them within the limits of safety.

### The Menne Process for Removing Metallic Obstructions.

The difficulty of removing solid masses of iron from tapping holes and similar locations in blast furnaces and elsewhere is one which at one time or another has probably confronted every practical man in the iron business. Many methods for accomplishing this have been proposed, such as melting the obstruction by an oil flame used with a hot blast, but none of the methods proposed hitherto have proved their practicability by being generally adopted.

According to *Stahl und Eisen*, Dr. Ernst Menne of Creuzthal, Germany, has developed a process for this work, of which the principle is to use the heat of combustion of the material which has to be removed and embodying also a method of disposing as quickly and as completely as possible of the molten mass. For example, a block of iron of about 16 inches thick is to be melted through. By means of an oxy-hydrogen flame, usually made up of coal gas and oxygen, it is first heated at one spot, which only needs to be very small but which must be raised almost to incandescence. When this is done the amount of oxygen is slowly increased, but lowered again if the hot place shows any signs of cooling. If the temperature is sufficient the excess oxygen causes an intense combustion of the iron itself, which can be increased by increasing the amount of that gas, while the inflammable constituent of the flame may now be considerably diminished or even entirely shut off without affecting the process. In a few minutes a hole is made in the block of iron, from which fluid iron and a shower of sparks are thrown. The pressure of oxygen should now be raised to from 300 to 450 pounds, in order that oxidation and fusion may take place with the greatest possible energy and also that the fluid mass may be completely cleaned out. It is even possible to bore a vertical hole from above, the fluid metal being ejected by the high pressure. The 16-inch block is melted through in the incredibly short time of about three and one-half minutes, although the surface of the same remains comparatively cool, while if the mass of metal is hot action takes place still more rapidly. The hole is about 4 inches in diameter. The operation is all the more remarkable since the oxygen emerging from the burner is, by reason of the decrease of the pressure, cooled to 10 degrees Celsius.

This process differs from earlier ones by the fact that the heat required does not come from the outside, but from within—namely, from the energetic oxidation of the material itself. Only in this way is it possible to obviate the loss of heat due to the conductivity of the metal and to produce at the point of fusion more heat than is carried away. This rapid radiation is what constitutes the difficulty of burning through even a comparatively thin sheet of iron by an oxy-hydrogen flame, and for this reason also it is often the case that with the new process heating up the spot to the necessary temperature is the longest part of the operation, while the actual melting takes but an extraordinarily short time. Each molecule of iron by its combustion communicates direct to the neighboring molecule sufficient heat to melt the latter, and it is only necessary to exercise care that this heat is not fruitlessly lost in the metal. As already indicated, this object is attained by removing the molten mass quicker than the heat can radiate, and that this is possible is shown by the fact that blocks of iron thus burned remain so cool on the surface that the hand can be placed there. The local development of heat is, however, intense, because, as can be shown by calculation, the combustion of iron by means of oxygen develops a higher temperature than that of hydrogen. The latter cannot produce a temperature above 2200 degrees C., as above that point disassociation of the hydrogen and oxygen is complete, while the temperature developed by the combustion of iron is calculated at 7660 degrees C.

The actual working of the process is very simple, requiring only apparatus which may be quickly gotten together. A few steel cylinders of 1.4 cubic feet capacity, each containing about 140 cubic feet compressed oxygen,

reducing valves to regulate the pressure down to 450 pounds, some lengths of pressure hose and a burner constructed as shown below are all that is required. The gas can be taken direct from the mains or, where these are not available, from apparatus for gasifying oil or gasoline. It is most convenient, however, to take the gas from steel cylinders in which it has been compressed to about 1500 pounds. The construction of the burner at first caused some trouble, owing to the fact that as the same is to be used in a deep hole it is necessary to protect the point, which would otherwise quickly melt. For this purpose the only material which proved sufficiently refractory is either some form of carbon, as compressed coke or graphite, or material such as magnesite or carborundum.

The small scale engraving to the right of Fig. 1 shows the burner with protected point and connections for the

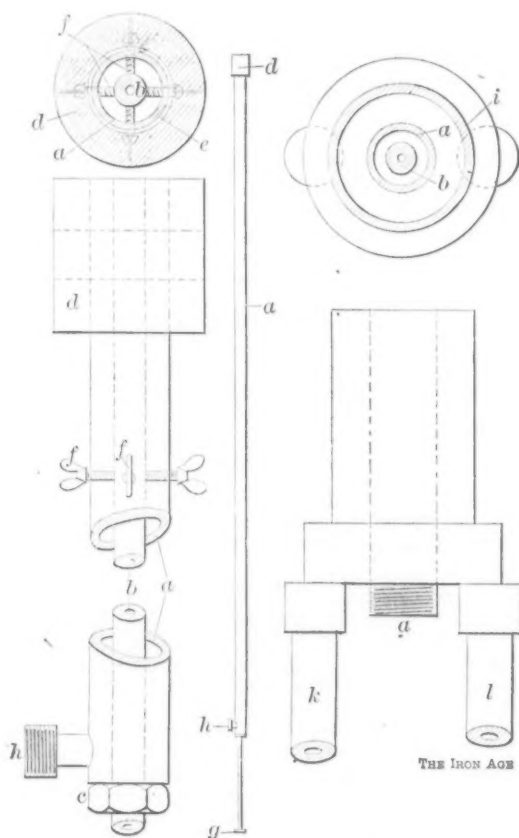


Fig. 1.

Fig. 2.

### THE MENNE PROCESS FOR REMOVING METALLIC OBSTRUCTIONS.

two gases; to the left of Fig. 1 are details of the burner on a larger scale. On the oxygen tube *b* is fastened the gas tube *a* by means of the gland *c*; *d* is the protecting material for the point of the burner. Between *a* and *d* is a layer of pliant material (asbestos paper) to protect *d* from splitting owing to the expansion of *a*; *f* are adjusting screws for tube *b*, while *g* and *h* are hose connections. The tubes can be protected at several places by rings of refractory material, in order that if one breaks the tube can only melt down to the next.

Instead of these refractory rings water cooled burner heads have proved practicable, the arrangement of the same being shown in Fig. 2. The burner here is furnished with a hollow head provided with water cooler *k* *l*. More recently the burner head has been made of copper, provided on the outside with corrugations of 3 to 4 mm., which are filled with fire clay. With this arrangement the cooling water at 15 pounds pressure hardly becomes warm. It is well to have the burner several yards long, but the other dimensions are small; it is sufficient if the external tube *a* is 20 mm. (0.75 inch) in diameter and the inner tube *b* 4 mm.

The method of setting up and using the instrument



can be seen by any practicable man without further description, but the following details may be useful: The gas is at first permitted to burn with a large flame and, the oxygen being used with a relatively high pressure but by no means in excess, it does not take long to raise a small spot to incandescence. The stream of oxygen is then carefully increased, without throttling the fuel gas, until a light shower of sparks makes its appearance, upon which the stream of oxygen may be increased and the fuel gas cut off completely. Melting proceeds rapidly, with a vigorous shower of sparks, and the stream of molten iron and oxides thrown out is often as thick as a man's finger. The burner is inserted further and further into the hole as the latter deepens, but if it remains too small the inner (oxygen) tube can be pushed forward alone. With very deep holes the pressure of the oxygen is increased above 450 pounds, to prevent the molten mass from solidifying before it reaches the outside. The diameter of the burner being 20 mm. (0.75 inch), the hole should be 2.50 to 4 inches; but if a hole of larger size is desired the point of the burner can be moved around the edge.

Interesting and of practical value is the behavior of copper, bronze or brass when subjected to the Menne process, which may be seen if a plate of iron and one of copper are fastened together. If the flame is put on the iron it is melted as described above, and can be removed clear down to the copper without in the least affecting the latter. This fact should prove very useful in cleaning out tuyeres, &c., which have become full of iron.

The process is, of course, not confined to the removal of iron, but may be used anywhere where the material to be removed contains combustible matter, as may be seen by the following examples of work actually carried out:

1. A blast furnace had become choked up almost to the tuyeres, and with the exception of two, which could only be opened occasionally, they were completely filled up. Starting from the slag notch, from which the cooler had been removed, a hole was bored in a few minutes almost to the middle of the furnace and, as everything proved to be solid here, it was continued, by means of a burner with bent point, in a vertical direction upward until fluid material was reached and enough slag could be drawn off to make it possible to keep the tuyeres open and get the furnace into shape again.

2. In a certain furnace five tuyeres were stopped for months by a solid mass 3 feet in thickness. By working for days holes could be drilled through the obstruction, but they immediately closed again; production, of course, fell very considerably and matters grew worse every day. By means of the Menne process holes 6 feet deep and increasing in diameter toward the middle of the furnace were burnt into the mass, after which the tuyeres remained permanently open and the production reached the normal.

3. A blast furnace suffered from continual breaking through the hearth jacket, which could not be stopped since the holes were not large enough to permit of a practicable job of patching. Pieces the size of a dinner plate were melted out of the jacket, and it was possible to stop up the cracks in such a way that the breaking out was stopped.

4. In a plate mill a coupling had to be changed. The same consisted of a steel casting 16 inches long and 8 inches thick, but it could not be loosened from the spindle even by the aid of fire, while to cut the same through with chisels would have taken days. The coupling was burned through its whole length down to the spindle (which remained uninjured) and then loosened in a few minutes.

As showing the rapidity with which some forms of boilers generate steam the following facts are of interest. A water tube boiler of only 50 square feet of heating surface and 2 square feet of grate surface, with a water content of 144 pounds, gave the following results from and at 212 degrees. All valves were closed at 8.15 a.m. In

five minutes the gauge showed 30 pounds, in five minutes more 130 pounds, in three minutes more the pressure was 210 pounds—that is to say, the pressure rose at the rate of about 27 pounds per minute. The fuel used was dry wood and common run of small Pocahontas coal. This is very rapid work indeed, and the subsequent performance with dirty fires, driving a small engine, gave very satisfactory results. A gauge glass broke during the test, when the pressure fell to 135 pounds and stayed at that point while the glass was being renewed. When it was in place the pressure ran right up to 180 pounds. During the trial there was no disturbance in water glass and no foaming or priming even when the safety valve was blowing violently. For a first test of a new boiler of a new type the results were very unusual.

It is stated by the *Marine Journal* that the forthcoming yacht races have a close connection with the alleged unlucky number 13 and the unpropitious Friday. The "Shamrock III" did not go out for trial recently because it was Friday, upon which day she met with her serious accident, as her namesake did. But the old cup winner, "America," had 13 men before the mast, she was voted the cup on a Friday and won the same on Friday, and on it were engraved the names of 13 English yachts which she defeated. If our new ship, the "Reliance," should win the race this fall she will be the thirteenth American vessel to defeat an English yacht. An Irish gentleman, Rory O'Moore to wit, has asserted that there is luck in odd numbers, and it is to be hoped that his prophecy will come true.

Alfred J. Major, president; Joshua A. Hatfield, vice-president in charge of contracting; Wm. H. Connell, treasurer; C. Huston of Pittsburgh, and August Ziesing, Western manager of the American Bridge Company, have been making a tour of inspection of the various constituent plants of the American Bridge Company. The committee have already visited the Minneapolis, Milwaukee and Chicago plants and will inspect the Detroit and Toledo works next week and from the latter place will continue East. It is reported that the bridge company have orders booked sufficient to keep the various plants of the company in active operation for eight to nine months, but, fortunately, very little of this material is under contract to be delivered before next spring. Hence the strike of the inside bridge workers is less embarrassing than it might otherwise be. Contracts for several thousand tons of railway bridges have been closed during the week and there is quite a large tonnage still pending.

The peculiarities of water tube boilers are many, as regards their action when in use, each type having some of its own, so that to manage them successfully requires a wide range of practical information. Russia has a steam school ship equipped with four types of water tube boilers, with a working crew of 400 firemen and water tenders. They are assigned to Chinese waters, and are supposed to have learned their lessons while on the passage. Reaching their destination they are drafted off to such Russian ships as may require them.

Coal companies in West Virginia are entering suits for damages against railroad companies because of alleged failure to furnish pro rata shares of cars. The latest important proceeding of this character has been instituted by the Kingwood Coal Company, whose plant is situated near Morgantown, on the West Virginia & Northern, which they sue for \$90,000, approximately. The defendants are asked to furnish the plaintiffs with a pro rata share of the general equipment and at the same time pay damages ranging from \$10,000 to \$15,000 a month.

The latest advices from the Cunard Company concerning their new 25-knot vessels are to the effect that they will be 760 feet long on the water line and 80 feet beam; they are to have triple screws and engines which will develop nearly 50,000 horse-power, under which stress the ships are expected to outdo anything that ever floated.

# The Iron Age

New York, Thursday, May 21, 1903.

|                         |   |   |   |   |   |   |                   |
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## The New York Building Trades.

It will be deplorable if the city of New York should be fated to undergo an experience similar to that of Chicago three years since. Yet conditions seem to be shaping themselves in that direction. The labor unions in the New York building trades have forced matters to such a point that employers feel themselves obliged to take a decisive stand for some degree of independence in managing their affairs. It may be well to recall what happened in Chicago when the builders and contractors of that city faced just such a crisis and made the year 1900 memorable in the annals of that city as the year of the greatest strike ever known in the building trades. It was properly a lockout, as it began in the demands of the associated builders and contractors for the adoption by the unions of more reasonable regulations governing the relations of employers and employees, and particularly the removal of restrictions on the quantity of work performed by a mechanic in an eight-hour day. No question of hours or wages was involved. The issue was simply whether an employer was to have any voice in the management of his business or the officers of labor unions were to run matters in their own way. The cost of building had been so heavily increased by the small modicum of work done in a day, apart from the high level of cost maintained by the very liberal wages schedules conceded to the unions, that builders and contractors found capitalists investing elsewhere in preference to making improvements in Chicago. They also found themselves in danger of losing large amounts on contracts which they had taken, based on the usual day's work by mechanics in eight hours. The fight was a contest of endurance and it was maintained nearly the entire year, ending in the unions receding from their arbitrary position. In this contest the employers had the support of public opinion, as they were not endeavoring to reduce wages or lengthen a working day, but were simply insisting that a man when hired should render a fair equivalent for his pay.

Conditions in the building trades in New York City have fast been growing intolerable by reason of the vicious practices which have developed under the unrestrained rule of the trades unions, and on Friday evening of last week a meeting was held of employers in this line of business which is declared to have been one of the most remarkable ever held in New York. It was a great outpouring of employers of labor and was marked by the earnestness which accompanies important movements. The view taken of the exactions of the labor unions was sharply expressed by C. L. Eldlitz, president of the Association of Electrical Contractors, when he said: "At first you were asked simply to take down the bar from the door. Later the chain was to be taken off. Still later the key must be left on the outside. All these demands and many others were granted, and now what is asked of you? That the door shall be taken off the hinges and thrown into the street." Resolutions were adopted in favor of immediate action toward the creation of a central body of employers in the building trades for the purpose of making employers "more secure in the

conduct of their business, workmen more secure from interference with their opportunity to work, and the public generally more secure from interruptions to business resulting from strikes or lockouts in the building trades." The speakers at this meeting did not attack union labor, but scored the demagogues in politics and the corrupt walking delegates who mislead union labor.

It is significant that at this meeting letters and telegrams were read from builders' and contractors' organizations in numerous other cities, not only expressing sympathy with the movement but in notable instances urging the organization of a national association of employers in the building trades. Evidently the impression is gaining lodgment in the minds of employers that no one city should stand alone in a contest to secure fair treatment from labor unions.

It is earnestly hoped that the good sense of some of the labor leaders may avert such a serious contest for endurance as now seems to be impending. They have it in their power to call a halt on the radical element in their ranks.

### Undermining British Free Trade.

Mr. Chamberlain has advanced a step further toward protection than when he endeavored to establish a Zollverein among the British colonies a few years since. He was not then prepared to depart so far from the British policy of free trade as to propose preference to colonial products. In an address to his constituents at Birmingham on the 15th inst., although he was careful to declare that he was no protectionist, he advocated a departure from the existing principle of free trade, proposing the establishment of preferential tariffs between Great Britain and her colonies. Mr. Chamberlain thus showed that he is not insensible to the growing dissatisfaction in Canada with the manner in which the overtures of the Dominion for closer trade relations with the mother country have been received. Canada has for five years admitted British manufactures at a lower rate of duty than that imposed on the same classes of merchandise coming from other countries. This preference, which at first was 15 per cent., now stands at 33 1-3 per cent., and is diverting to Great Britain a steadily increasing volume of Canadian trade. But the Dominion is receiving no corresponding advantage in British markets, and Canadian manufacturers are growing restive under the competition to which they are subjected. Our Canadian correspondent has alluded to this matter quite frequently.

Although the present Canadian Government is inclined toward a low tariff and has discouraged deputations of manufacturers from expecting any general increase in duties, yet the sentiment of "Canada for Canadians" is so strong that it would not be surprising if the pressure for more protection should become too heavy to be resisted, especially if Great Britain shows no disposition to give at least a few colonial products preference in her markets. It is interesting to note in this connection a disclosure by Mr. Chamberlain of a further understanding with Canada which had not been suspected. He stated that Canada was willing to give Great Britain even greater preference, "especially regarding goods in which the British competed with foreigners, if Great Britain was willing to give her a drawback or tax of a shilling per quarter on grain."

Unquestionably Mr. Chamberlain is the ablest man in the British Cabinet, although he is not the Prime Minister. He does not hesitate to express himself plainly when he believes that an issue has presented itself. In the course of his Birmingham speech he declared that the present position of affairs with respect to the rela-



tious between Great Britain and her colonies was incongruous, and that "a new situation must be met by a new policy." Mr. Chamberlain has shown himself such an able leader under much more trying circumstances that it may not be improbable that he has correctly gauged the predominant sentiment of the people of the United Kingdom. His position was not only received with approval by his audience, but protectionist influence has been growing for some time among British manufacturers and it always has existed among agriculturists. If a breach should be made in the free trade policy of Great Britain by the establishment of any duty to favor a colony, it would surely be followed by protectionist legislation of a more general character. And to think that such a movement should have its start in the city once so loyal to John Bright!

### Bank Currency and the Aldrich Bill.

Another periodic wave of interest in our currency problems is passing over the country, deriving force, in some measure, from the recent public remarks of President Roosevelt at various places west of the Mississippi River. Thoughtful men have again taken up the task of explaining, or rather reiterating, our currency needs, pointing out the anomalies in our subtreasury system and wherein our revenue scheme may be improved. Economists, who had grown weary and sick at heart, as well as gray, in numerous educational financial campaigns, have taken courage again from the belief that the patriotic bread they cast upon the public waters is about to return after many days, and are again helping to a full understanding of the relation between banking and the currency. Current events, too, have been favorable, demonstrating the soundness of the so-called "banking principle" as opposed to the "currency principle," which has proved so inadequate to the growing commercial needs of this country with its great territory and system of independent banks.

There is reason to believe that a majority, or at least the controlling minority of the majority, of the business community, are educated upon the subject of asset currency, and that the deep rooted prejudice against the banking interests, so prevalent five or ten years ago, especially in the rural districts, has disappeared before the sun of intelligence.

The subcommittee of the Senate Finance Committee, now laboring at Hot Springs, Va., is reported to be still exercising its ultra-conservative spirit in the preparation of a revamped Aldrich bill, which, while relating primarily to the deposit and security of public funds in national banks, also contemplates the engrafting of an emergency currency clause upon our bond tied national bank notes, the emergency notes contemplated being authorized to within 20 per cent. of bank capital and subject to a tax of from 2 to 5 per cent.

What the object can be in preparing a legislative bill after the pattern of Joseph's coat is not very clear. The temporary disposal of the surplus revenue of the Government has no connection with the establishment of a more rational system of national bank currency, other than that both operations as at present conducted interfere at times with the normal working of the money market. It would seem desirable that these two subjects, being foreign, should be considered separately, and that each should stand upon its own merits.

While the Secretary of the Treasury has already cut the Gordian knot into which the affairs of the national Treasury were drawn by an embarrassing surplus revenue and an anomalous subtreasury system, it is highly desirable that a law should be enacted definitely authoriz-

ing the Secretary of the Treasury to accept other than Government bonds to secure the deposit of public funds. The requirement, too, that customs receipts be excluded from such deposits should be eliminated. But to require that certain bonds must be purchased to secure the deposit of public moneys and then to demand interest upon the deposits does not seem commendable.

As has been pointed out many times before, the price of Government bonds has more to do with regulating the amount of currency taken out by the banks than the needs of the business of the country for additional circulation. At present there is no urgent demand for increased circulation; on the contrary, there is a decidedly easier feeling in the monetary centers, and reports from the country generally indicate that there is an ample supply of money available for legitimate business purposes. But during the month of April over \$8,500,000 was added to the bank note supply. This increase is, of course, the result of the refunding operations of the Treasury Department, the increased supply of 2 per cent. bonds depressing the market price so as to increase the profit to be made on circulation based on them. Within four or five months the crop moving season will be upon us, and the usual urgent demand for currency will be experienced. It seems likely, however, that the present increased volume of currency will be wholly employed ere the time of activity arrives, as only by utilizing the increased circulation can profit be secured to the banks. It is significant, however, that the largest banking institutions in the Western reserve cities wherever it is possible are making loans to mature about the time when the annual flow to the rural districts begins.

It is well understood that the principal object of the Secretary of the Treasury in refunding bonds was to stimulate banks to increase their circulating notes, and it is estimated that nearly if not quite all of the entire \$100,000,000 covered by his offers will be refunded, and this successfully carried out will mean a total increase in bank circulation of upward of \$50,000,000. Reasoning from past experience, it seems probable that many will hold the new 2 per cent. bonds as investments, and the probability seems to be that these bonds being well absorbed will induce an advance in the market price to such a point as to discourage banks from taking out additional circulation. To further increase the circulating notes the Treasury Department may have recourse to the policy adopted last fall of allowing deposit banks to substitute other securities than Government bonds for public moneys, and thus make available more bonds as a basis for circulation.

But when the period of monetary activity is over the circulation can be retired only at the rate of \$3,000,000 per month, according to existing laws, and the banks must necessarily find new avenues of employment. And the next period of monetary activity will find these funds absorbed, and as difficult as ever to obtain during the times of stringency. In each succeeding year the Secretary of the Treasury will be in a less favorable position to render assistance in increasing the volume of currency. Next February the 5 per cent. bonds of 1904, amounting to a little over \$19,000,000, will mature, and thus the supply of Government bonds available for circulation will be decreased. In these maneuvers are reflected the difficulties of our inelastic bond secured currency. The only effective remedy, to which reference has been made repeatedly, is the adoption of a credit currency system by which the supply of circulating notes may be proportioned to the demand without the assistance of interference of the Government.

A practical demonstration of the efficacious working of the "banking principle" of note circulation is seen in

France, as well as in Canada, and is based upon the theory that the issue of circulating notes is a legitimate function of banking, the notes resting upon the credit and secured by the assets of the bank. By requiring the banks to redeem their notes on demand; charged to pay out no other notes than their own, which are a first lien upon assets; guarded by a safety fund to insure prompt redemption of notes of insolvent banks, a note currency is provided which responds to the varying needs of the business community. It is an elastic medium of this nature which will best meet the permanent requirements of the various business interests of the United States, and such a currency was contemplated by the Fowler bill.

The emergency feature of the Aldrich bill seems to be only a temporary makeshift; it does not meet the issue squarely, and would not remove the evils of our bond secured currency.

### The Strike of the Marine Engineers.

One of the most curious and interesting incidents in the current history of the labor movement is the strike of the marine engineers. It has attracted less attention than it would have done had not the railroads made such concessions as averted a tie up of business at their tidewater and lake terminals; but it is still a live question of great public interest, and one which will more or less seriously involve the United States Government. Indeed, it has already done so in the person of George Uhler, whose relation to this discussion would seem to invite more attention than the administration has yet found time to give it. The facts, as very clearly set forth in *American Syren and Shipping*, are of sufficient general interest to merit brief recapitulation.

Mr. Uhler was president of the Marine Engineers' Beneficial Association. In that position he was extremely efficient. He managed the executive business of the association with skill and judgment, and showed the practical wisdom of the pilot in keeping a wideawake lookout ahead. Having got everything in shape for a national strike, that part of his work was finished. The whole situation was canvassed, the demands of the engineers formulated and the plans for a general strike perfected. The engineers are in a position of unique advantage. They are probably the only body of organized wage earners whose members pursue their vocations by virtue of commissions, or licenses, issued by the United States Government. In the event of their disinclination to pursue their official functions they are protected against competition from persons outside their organization by the fact that no persons not holding licenses can under any conditions take their places. Of the 3200 licensed engineers in or near New York about 2700 are members of the union.

By virtue of their licenses, the marine engineers, like the pilots, are prevented from striking. They are in a sense public servants, and their functions are so important to the public welfare that their refusal to perform them would operate as a forfeiture of their licenses, making it incumbent upon the representative of the Government in charge of this service to cancel them for nonuser. There is, however, nothing to prevent a licensed marine engineer who is dissatisfied with his "job" or the conditions of his employment from resigning his position; ergo, there is nothing to prevent 2700 engineers from simultaneously reaching the conclusion that they are dissatisfied with the conditions of their employment. If it should happen that all 2700 resign at or about the same time, each on his own account and independently of the others, the individual right has only been exercised by that number of persons undoubtedly having it and being at liberty to use it. The coincidence of action at all

ports on a given date might attract attention, but that is the affair of those who notice it. Very likely the fear that practically unanimous action along a given line, and based upon a common demand, might seem like a strike and possibly make it incumbent upon the head of the Bureau of Marine Engineering to so regard it, suggested itself to the counsel of the union, and for this reason it was expedient, if not necessary, to make sure that the chief of the Steamboat Inspection Service, with whom resides the power to grant and revoke licenses, should understand the matter clearly and not be misled by misjudgment into any hasty or embarrassing official action. Obviously, if a concerted resignation was interpreted to possess the distinctive characteristics of a strike and those who took part in it lost their licenses, it would be rather serious business for the strikers and possibly advantageous in the end for the employers. It was necessary, therefore, for the head of the Steamboat Inspection Service to be free from any illusions; so the capable and versatile Mr. Uhler, having concluded all necessary preparations for a general resignation of the members of his union, promptly resigned its presidency and caused himself to be appointed chief of the Steamboat Inspection Service. He was thus placed in a position to pass upon the acts of those who co-operated in carrying his plans into effect. In his view members of the union of marine engineers who resign are not strikers, and have done nothing to forfeit their licenses. If their places are vacant it will be the easiest thing in the world to find incompetent those who apply for licenses with a view to filling them. It is a beautiful combination. It would have been paralleled if at the climax of the recent anthracite strike John Mitchell had resigned as president of the United Mine Workers to accept the commission as sole arbitrator of the issues between the operators and the miners.

Meanwhile, however, things have not worked out exactly as was expected or intended. The local inspectors of steam vessels at St. Louis are evidently dull of comprehension. Not being able to draw nice distinctions between simultaneous resignations and a strike designed to tie up the shipping of that port until the demands of the union are granted, they have decided that the licenses of those who resigned are revocable, and steps to revoke them have been taken. In point of fact they are now under suspension, and if they wanted to return to work they could not do so. The steamboat owners of St. Louis gain nothing from this condition, save in so far as it may contribute to the gayety of nations. They cannot run their boats without licensed engineers, and these cannot be had, since it is scarcely to be expected that the Supervising Inspector General of Steam Vessels, late president of the Marine Engineers' Beneficial Association, will see his work undone by permitting the invasion of competent outsiders into the ranks of the engineers holding licenses and refusing to use them. A like embarrassment has overtaken him in New York. Ex-Senator Wray, counsel for the independent tugboat owners, is moving through the courts to cancel the licenses of the striking engineers who will not work themselves nor permit others to work. It is extremely unkind thus to conspire to spoil the plans of Supervising Inspector General Uhler, who, after getting everything in line for the strike which began May 1, expected to have plain sailing in sustaining those who took this action by ruling that simultaneous resignation on an ultimatum did not constitute a strike and left the licenses of those who thus resigned unimpaired. *Syren and Shipping* presents the dilemma of the Supervising Inspector General in the very lucid language of the following paragraph:



Will Supervising Inspector General Uhler discipline his St. Louis inspectors for daring to declare unlawful the course promulgated by President Uhler of the Marine Engineers' Beneficial Association? Or will Supervising Inspector General Uhler concede that President Uhler stepped outside of the pale of the law? The case takes on added interest, considering that in the revocation of the licenses of hundreds of marine engineers in the port of New York, Local Inspector Dumont, who has just been deposed from the office of supervising inspector general to make room for his friend, President Uhler of the Marine Engineers' Beneficial Association, may have a chance to outmaneuver and outmatch his successor in the chief office. Will ex-Supervising Inspector General Dumont as local inspector discipline ex-President Uhler of the Marine Engineers' Beneficial Association, while teaching law to the new supervising inspector general? Mr. Dumont has always been known as a strict and unyielding official martinet. It is not to be believed that the leopard will change its spots, just at a time, too, when they shine with such brilliant refulgence! With the licenses of the engineers revoked; with the boats laid up in dead earnest because licensed engineers will be unobtainable; with Mr. Uhler trying to figure out whether or not he was right as president of the Marine Engineers' Association, or if he must enforce the law against himself as inspector general; with Local Inspector Dumont hot on his trail, armed with the authority of his new office, there will certainly be something doing in this good old summer time in the Steamboat Inspection Service!

There is a moral to this story which he who runs may read. Men who have been trained in the school of trade unionism are not suitable material from which to make officials charged with the duty of an intelligent and impartial enforcement of the law. It is conceivable, of course, that an official in Mr. Uhler's position would find the pressure of official responsibility educational, and rise to the height of repudiating, like Mr. Gladstone, what he said and did "when in a position of greater freedom and less responsibility." But this is scarcely to be expected. Organized labor presses its representatives for positions of official responsibility not because they are fit men for such places but because it is believed they will misuse the power of their offices to further union ends. It is for this reason that the unions are protesting against the retention of Carroll D. Wright in the position of Commissioner of Labor and clamoring that a representative of the unions shall be put in his place. They do not want the truth, but such fictions as will be agreeable to organized labor and helpful to the propaganda of strife and contention. Their plans in this direction are very likely to eventuate in just such an opera bouffe situation as exists in the Steamboat Inspection Service. The independent steamboat owners are not as unhappy as it was expected by the engineers they would be. They have always paid wages during the spring overhauling of their boats; this year they are paying nothing. Should they have to yield to the demand for increased wages and shorter hours they will not find it an overwhelming misfortune. There will be no more vacations with pay; no more percentages in addition to salaries, and the accounting for time, tools and fuel will be much stricter than hitherto. It may be found in the end that the engineers would have done better to have been content with the best relations they could establish by peaceful means on the basis of faithful service and an active interest in the welfare of their employers. As for Mr. Uhler, his position is anything but a bed of roses. If he betrays the union, which was instrumental in securing his appointment, he will be denounced as a traitor to the sacred cause of labor, and his friends will become his enemies; if, on the other hand, he betrays his official responsibilities by unjust rulings, his official career is likely to be short, and he will find himself describing a trajectory with a boot toe at one end and nothing to light on at the other. His appointment in the circumstances was obviously ill advised and improper.

Harrison Souder of the Cambria Steel Company, Johnstown, delivered a lecture before the Franklin Institute of Philadelphia, entitled "Cuba of To-day; Engineering Notes and Impressions."

## CORRESPONDENCE.

### The Methods of Some French Tool Steel Makers.

To the Editor: We have noticed your article on page 28 of this week's issue of *The Iron Age* and think that the same is too general regarding French steel. We agreed with a salesman of a French steel to make a trial of a certain lot for dies, and after his departure were fully advised by salesmen of American steel of the tricks which would be played on us. When the steel arrived it was just in the amount ordered, and on being tried gave much better satisfaction than any other steel we were ever able to get, although we have used large quantities of the best makes, both American and English. There may be many who are not furnishing good steel, but some of it is especially good.

ERIE, PA., May 15, 1903.

MANUFACTURER.

It is probable that some important changes will be made within a short time among officials of the Standard Steel Car Company, Frick Building, Pittsburgh, Pa., whose works are located at Butler, Pa. A number of officials are expected to retire and new ones will be appointed to succeed them. J. M. Hansen, president, will continue in that position. It is said that the Mellon interests of Pittsburgh will be largely identified with the company in the future. The proposition to sell the plant of the Standard Steel Car Company to the American Car & Foundry Company, which was up some time ago, has been dropped and nothing will come of it. It is the intention to very materially increase the plant of the Standard Steel Car Company at Butler, Pa., as the concern are crowded with orders and need increased capacity to take care of the heavy demand for steel cars.

The Wanamaker department store to be constructed in New York City will be 16 stories, 13 floors above the street, with an attic, basement and sub-basement, of steel and stone construction, terra cotta trimmings, with plate glass windows. The estimated cost of the building is placed at between \$2,500,000 and \$4,000,000, the wide variation doubtless being due to the uncertainty as to the equipment. Notice of the placing of the contract for the structural material was given some weeks since and bids have just been closed for the hardware. Plans are now being prepared for heating and lighting plants to be used in both the New York and Philadelphia buildings, but D. H. Burnham states that it will be some time before details can be made public.

The Toronto & Niagara Power Company have awarded the contract for the construction of their power tunnel to A. C. Douglass of Niagara Falls. This underground raceway is to be 2100 feet long, about 25 feet high and 18 feet wide. It will carry the water from a wheel pit to the gorge. Mr. Douglass is the contractor now building a tunnel for the Canadian Niagara Power Company, and he will prosecute the new contract at the same time.

The Eastern Shipbuilding Company of New London, Conn., have received a contract from the New York, New Haven & Hartford Railroad for two steel floats for use for ferrying purposes from the Consolidated's Harlem terminal to the new Pennsylvania terminal at Greenville, N. J. The two floats will be built tandem on the ways recently vacated by the launching of the Great Northern steamship "Minnesota." Each will be 318 feet long and 38 feet beam.

At a meeting of the directors of the Landis Tool Company of Waynesboro, Pa., the strike of the machinists was settled by a readjustment of wages that practically gives the men, 40 of whom have been out since April, a 9 per cent. advance in wages. The strikers asked for 5 per cent. A Saturday half holiday was also granted, but the company refused to recognize the machinists' union, insisting that there be no discrimination between union and nonunion men. The wage advance will affect all departments.

## Stove Manufacturers' Conventions.

The stove manufacturers held a series of conventions last week in Cleveland, Ohio. The Western Association of Stove Manufacturers held their adjourned quarterly meeting on Monday; the Stove Founders' National Defense Association met on Tuesday, and the National Association of Stove Manufacturers consumed Wednesday and Thursday in their deliberations. All these conventions were attended by a very large number of the membership of the respective associations. It may be said, in fact, that on few occasions has the proportion of the membership in attendance been so large.

The principal business coming up before the Western Association was the consideration of a report of a committee on the equalization of prices. This is a matter which has been receiving careful consideration for a considerable period. The report was received with approval, and the recommendations made will doubtless bear good fruit in establishing a proper system for pricing stoves of the same class. The lack of uniformity in this respect has long been considered one of the unsatisfactory features of the stove trade which needed reforming. The meeting was thoroughly harmonious.

The Defense Association showed their approval of the excellent work done by the officers during the past year by re-electing the entire board. The list of officers thus selected is as follows:

*President*, Chauncey H. Castle, Quincy, Ill.

*Vice-President*, Henry Cribben, Chicago.

*Secretary*, T. J. Hogan, Chicago.

*Treasurer*, Abram C. Mott, Philadelphia, Pa.

*Second District Committee*: Grange Sard, Albany, N. Y.; E. W. Peck, Rochester, N. Y.; R. G. Rennolds, Richmond, Va.; W. D. Snyder, Columbia, Pa.; H. T. Richardson, New York City.

*Third District Committee*: Jeremiah Dwyer, Detroit, Mich.; Lazard Kahn, Hamilton, Ohio; James Dwyer, Detroit, Mich.; Stanhope Boal, Piqua, Ohio; S. R. Baldwin, Pittsburgh, Pa.

*Fourth District Committee*: D. McAfee, Quincy, Ill.; N. H. Burt, Leavenworth, Kan.; H. A. Viets, Milwaukee, Wis.; F. Sattler, Belleville, Ill.; R. S. Buck, St. Louis, Mo.

The work of the year was reviewed in detail in the report of President Castle, who stated that over 200 labor troubles had been adjusted in that time. Many of these were of relatively trifling importance, but all of them had to be handled with the utmost care, as even petty difficulties are liable to develop quickly into serious ones if not prudently and judiciously handled. The year was thus a strenuous one, entailing great labor on the executive officers. The work of the association has more than trebled in the past seven or eight years, and from present appearances it seems likely to increase. Up to last year the association had only the molders' union to deal with as representing organized labor in the stove factories, but the stove mounters and metal polishers have since been organized, and annual agreements are therefore to be made hereafter with the Stove Mounters' International Union and the Metal Polishers' Union. Highly eulogistic speeches were made relative to the work done by the president and secretary, through whose exertions all the labor troubles of the year had been settled without a strike of any moment. Secretary Hogan's salary was increased 50 per cent., which speaks more eloquently than words of the estimation in which his services are held. The Defense Association now have under their direction nearly 80 per cent. of the workmen engaged in the manufacture of stoves. They do not aim to include all stove manufacturers in their organization, but exercise judicious care in admitting new members. The candidates for membership who successfully met all requirements and were admitted at this meeting were seven in number, and are as follows:

Smith & Anthony Company, Boston, Mass.  
Walker & Pratt Mfg. Company, Boston, Mass.  
Weir Stove Company, Taunton, Mass.  
Buckwalter Stove Company, Royersford, Pa.  
Floyd, Wells & Co., Royersford, Pa.  
Detroit Stove Works, Detroit, Mich.  
Sheridan Stove & Mfg. Company, Quincy, Ill.

The meeting of the National Association was its thirty-second annual convention. President Albert N. Parlin of Boston called the sessions to order in the banquet hall of the Hollenden Hotel on Wednesday morning at 11 o'clock. He introduced the Rev. Harris R. Cooley of the Board of Public Safety, Cleveland, delegated by Mayor Tom L. Johnson to represent the city on this occasion. Mr. Cooley made a graceful speech of welcome, to which a suitable reply was made by President Parlin, who then delivered his annual address, from which we take the following excerpts:

### Another Year of Great and Unexampled Prosperity

has rewarded the efforts of farmer and artisan alike, and, while signs and omens of coming disaster have from time to time been heralded by the would-be wise, still the fact remains that the country, as a whole, is many millions richer than when we last met, and thus much better able to withstand the shock of adversity. We rejoice in the unique position which our beloved country occupies among the nations of the world. We have absorbed the enterprising poor, the dissatisfied and oppressed of all nations, and have assimilated them within one generation, so that, having the best of each, we are superior to all. We expand as the older countries contract; as age enfeebles the parent, the son grows lusty and strong.

Financial interests, popularly referred to as "Wall Street," in an attempt to "eat the calf before it is born," have been troubled with indigestion, and the consequent pain that might be expected to result from a diet of unripe fruit. We, however, who cater to the necessities of mankind, can rejoice in the results that have come to us as the reward of earnest and intelligent effort, while conducting our business along proper lines. I venture the assertion that those of us who can truthfully say that they have done this business during the past year have no just cause to complain of the outcome. If I am correct in this statement may we not take advantage of the position we have attained and

### Intrench Ourselves for the Future by Wise Action

at this time? It is easy to reduce prices and kill the margin of profit. It is exceedingly hard to get back again, and never possible save through a combination of fortunate circumstances. We have climbed the mountain laboriously; if we must descend, let us choose the easiest path. One year ago I likened the position of the trade to a traveler through a mountainous country, and expressed the hope that we might have reached a plateau, where for a time the worry and strain of previous efforts could be laid aside and a period of peaceful prosperity enjoyed. I believe we are now thus proceeding on our way, and if those of us who are present could realize the possibility of continuing this delightful condition indefinitely we would apply ourselves most earnestly to that end. Let us devote our time while here to the discussion of this subject, for it is possible for our industry to accomplish what would be impracticable to many others.

We, as stove manufacturers, may be likened to the pin which holds in proper position the wheel in a watch. The great captains of industry—so called—hardly realize our existence, but as the pin is of much more importance than the highly ornamented case (for the latter could be dispensed with and yet the machinery would correctly register the passing of time) so, while we may be unknown and unappreciated, we are indispensable, and in this fact lies our greatest strength. The stoves we make are in one respect like coffins—no one will buy but one at any price and no one cares to examine his own very closely. You cannot, therefore, create trade, but we are sure of a certain volume in good or bad times, and, if we except articles of food and the aforesaid undertaking industry, subject to less fluctuation than any other.

### Success Not Attained by Cutting Prices.

Success with us may be attained by co-operation, but never by cutting profits. We have reached, as I stated before, by slow degrees, reasonably profitable prices for our goods. It should be the aim of every member of this association to maintain these prices for the present year, at least. Remember, when you are tempted to make a concession, how fruitless it will be in ultimate good and how sure to react harmfully upon you and all of your competitors. During the spring and early summer, when under normal conditions we are accumulating stock and orders are few, the temptation is very great to make sales and to believe the story that the salesman brings as a reason why he did not get an order—viz., that your competitors were cutting prices. This is especially apt to be the case if we are a little short of money, and think we can make a cash sale and turn some slow stock; but the man who resists this temptation will have his reward when later the natural demand takes all his accumulated stock at full prices and his balance sheet shows him a fair return for his year's labor.



As an association we entered upon the past year with every prospect of a record breaking business, but the unexpected happened in the shape of the greatest contest between employer and employed that this country has ever seen, which threatened at one time to bring positive distress, if not loss of life, to many of the dwellers in our large cities. As a consequence our fall business was practically destroyed. No one would buy a heating or cooking apparatus if, as the newspapers proclaimed, there would be no fuel obtainable.

#### **The Labor Problem and Sensationalism.**

At this point, if time permitted, I should like to discuss two thoughts that forcibly present themselves—viz., the labor problem and yellow journalism—the one complicated and aggravated by the other, to the infinite harm of those who must work for wages, as well as of those who employ their services. Sensationalism never created any good thing or aided in the world's progress, and the selfish individuals who indulge in it for the sole purpose of personal gain, without regard to those who may suffer thereby, are worthy only of the profound contempt of all honest and sincere men.

#### **Consolidation.**

All efforts to consolidate the stove business have so far proved fruitless. While all are ready to admit the great savings possible and the many advantages probable, still when the well dressed and seductive promoter approaches us to cajole or threaten he finds us coy and fearful of intrusting ourselves to his embraces. So far we prefer single blessedness to wedlock. We are to discuss this subject later.

Seriously I believe, first, we attempt too much. Let the leading concerns in competing territory try to reach conclusions first. The United States Steel Corporation would never have been possible if smaller combinations had not first been formed. Second, we think more of making a large capitalization than a safe one; of getting the advantage of our neighbor rather than of benefiting him and ourselves at the same time. I prophesy that past methods must change or we will never reap the benefits of consolidation.

Many attempts have been made during the past year by local associations to equalize and adjust the prices of competing stoves; some have met with a fair degree of success, while others have resulted in failure. I doubt if lasting good can be attained in this way.

I cannot too strongly recommend the universal adoption of 60 days as the limit of credit, with a uniform discount of 2 per cent. for cash in ten days. Some elasticity may be given to dating bills to cover the season's requirements if deemed desirable, but let us as a body declare unequivocally in favor of the above named terms.

#### **Thanks to Defense Association.**

Our thanks are due and most freely given to the National Defense Association, and especially to its efficient officers, for the good work they have done during the past year in harmonizing the difficulties that have arisen between employers and employed. While I cannot speak with full knowledge, enough is known to convince us all that the spirit of fairness and conciliation that they have ever shown in dealing with the labor question has resulted in great good to every member of this association, as well as to those whom we employ. Our interests are identical and should ever be so regarded.

As the costs of our goods are constantly changing this subject should have careful attention at every convention, and I trust that the united wisdom of the entire membership may be given to its discussion at this time. I will not take your time by rehearsing the other subjects mentioned in our programme, but trust they will all be fully and intelligently debated, so that as we return to our homes we may each feel that we have gained knowledge and are better equipped than ever before to attain desired results in our respective fields of effort.

#### **WEDNESDAY AFTERNOON.**

The convention covered several of the topics scheduled in the programme as matters for general discussion, first taking up consolidation. As usual, this brought out expressions of opinion from a number of the members. No new points developed, however, and it appears to be the general opinion that the manufacturers are not anxious to consolidate.

The question of costs was treated very practically. It was decided that the system of ascertaining the costs of manufacturing stoves required considerable modification to meet new conditions. Sheet steel now enters quite largely into stove and range construction. The forms now in use for determining costs are correct for cast goods, but changes are necessary to adapt them to steel constructions. Changes will be made to meet this point.

The equalization of prices was a subject which awakened much interest. It is expected that the work now being done in this direction by local associations will prove effective in applying the principle on a broader scale.

The reports of the secretary and treasurer were presented. The association showed their appreciation of the excellent work done by Secretary Hogan by giving him an increase in his salary of \$1000 per annum.

#### **THURSDAY'S SESSION.**

The proceedings were concluded in one session on Thursday. A considerable portion of the programme still remained for consideration, and some of the topics received limited attention.

The question of the desirability of a uniform cash discount of 2 per cent. in all districts was admitted, but no action was taken toward establishing it.

That cooking exhibits constitute an expensive method of advertising stoves and ranges which should be abolished was shown by the adoption of a resolution favoring their discontinuance.

The practical topics of molding and polishing machines in stove factories were discussed at some length and several who had used them gave their fellow-manufacturers the benefit of their experience, but no action was taken regarding them.

An interesting discussion took place with regard to traveling salesmen, in which comparisons were made between the young man educated in the factory represented by him on the road and the experienced or professional salesman ready at any time to change to the highest bidder.

Co-operation between district associations received some attention; but it was deemed advisable to refer the matter to the district secretaries, who, in connection with the general secretary, are to develop a plan by which to secure this desirable action.

The breakage of goods in transit was placed in the hands of a committee who were instructed to take up the matter with the railroad companies in the hope of securing a change from present methods.

The catalogue house question was recognized as a difficult proposition to handle, and while the retail dealer has the cordial sympathy of the members of the association, no practical solution presented itself and therefore no action was taken.

The subject of packing goods for foreign shipment was ably handled by W. J. Myers of New York. He took issue with those who asserted that American stove manufacturers do not pack their goods properly, and from his experience in handling export trade gave convincing reasons in support of his position. He asked if it was reasonable to suppose that, if a manufacturer took the utmost care to supply the precise character of goods desired by a foreign buyer, he would fail in such a simple matter as packing. Stove manufacturers have often suffered for the shortcomings of other exporters. He cited instances in which other goods had been received in bad condition by foreign buyers, and as stoves happened to constitute part of the shipment by the same vessel they were included in the sweeping claim that all the goods had been badly packed. But sometimes it happens, said Mr. Myers, that the breakage of stoves is due to careless handling in loading. He had seen several crates of stoves picked up in a sling, guided by a rope in the hands of a man on the dock, who permitted the load to crash against a mast or drop in the hold. The crate would stand the shock, but the concussion would break some of the plates. This was clearly not the fault of the shipper or manufacturer. Numerous points were thus brought out, which were of much interest.

It is stated that for the first time in the history of the association no deaths were reported among the members during the year, and consequently no obituary resolutions were presented.

The election of officers resulted in the choice of the following:

*President*, Henry Cribben of the Cribben & Sexton Company, Chicago.

*First Vice-President*, Peter B. Acker of the Union Stove Works, New York City.

*Second Vice-President, J. W. Van Cleave of Buck's Stove & Range Company, St. Louis.*

*Treasurer, Lewis Moore of the Joliet Stove Works, Joliet, Ill.*

*General Secretary, Thomas J. Hogan, Chicago.*

*Board of Managers: G. B. Gunderson of the Detroit Stove Works, Detroit, Mich.; Joseph W. Emery of the Channon-Emery Stove Company, Quincy, Ill.; E. W. Anthony of the Smith & Anthony Company, Boston, Mass.; W. J. Myers of the Union Stove Works, New York City; Wm. H. Cribben of the Cribben & Sexton Company, Chicago.*

#### **Presentation to W. S. Stevenson.**

An interesting episode in the proceedings was the presentation to the retiring treasurer, Walter S. Stevenson of Philadelphia, of a very handsome silver loving cup. Mr. Stevenson severed his connection with the Thomas, Roberts, Stevenson Company in January and is no longer in the stove trade. The presentation speech was made by ex-President Grange Sard, who expressed in strong terms the high esteem with which Mr. Stevenson was regarded by his fellow members. The association further honored Mr. Stevenson by electing him an honorary member for life. He is the second to receive this distinction, the first having been Fred. W. Gardner.

#### **Next Convention in New York.**

New York City was selected as the place of meeting next year. In view of the frequency of the meetings in New York it was decided not to burden the trade of that locality in contributing to the entertainment of the convention, and the association will therefore arrange for their own entertainment. The convention then adjourned *sine die*.

### **PERSONAL.**

Daniel G. Reid of the United States Steel Corporation has donated \$50,000 for a new hospital to the city of Richmond, Ind., in which city his early business life was spent. The gift is made with the provision that the citizens raise \$25,000 as an endowment fund.

At a recent meeting of the directors of the Buffalo & Susquehanna Iron Company, at Buffalo, William A. Rogers was elected president; Frank H. Goodyear, vice-president; Charles W. Goodyear, second vice-president, and Hugh Kennedy, general manager.

Julius Bieler, treasurer of the Crucible Steel Company of America, has been made a member of the Board of Directors of the Allegheny Valley Bank, at Pittsburgh.

At Pittsburgh A. R. Fraser has resigned as treasurer of the Standard Steel Car Company and L. G. Woods of the Mellon interests was chosen to succeed him. Mr. Fraser remains a member of the board. R. B. Mellon was elected a member of the Executive Committee.

E. H. Whiting, formerly general manager of the American Car & Ship Hardware Mfg. Company, New Castle, Pa., has resigned. James Patterson, who has been in charge of the works for several months, will continue as general manager.

John W. Garland and Robert Garland of the Garland Nut & Rivet Company of Pittsburgh, and also connected with other large industrial enterprises in that city, are prominent officers of the Industrial National Bank recently organized in Pittsburgh.

E. W. Mudge of Pittsburgh has been appointed general sales and purchasing agent of the La Belle Iron Works, Steubenville, Ohio, effective from May 18.

R. F. Van Doorn is no longer connected with the Struthers, Wells Company of Warren, Pa., but has associated himself with the Titusville Iron Company, founders, machinists and boiler makers of Titusville, Pa., as general sales manager.

D. M. Parry, president of the National Association of Manufacturers, made the principal address at the annual convention of the Piano Manufacturers, held at Buffalo last week. His subject was Organized Labor from the Manufacturers' Standpoint. The address was a carefully prepared treatise on sociological conditions now prevail-

ing in this country with reference to labor as viewed by the manufacturer.

The Merchants' Exchange of Buffalo last week presented to Col. Thomas W. Symonds, United States Engineer, a beautiful silver tea service and gold watch and chain, from Tiffany's, as tokens of the appreciation by Buffalonians of the notable engineering work done by him on the Niagara frontier, and especially upon the new harbor and breakwater built at Buffalo during the seven years in which he was stationed in that city. The occasion was Colonel Symond's departure for Washington, where he is to be stationed hereafter, Col. Theodore A. Bingham, whom he supersedes there, having been transferred to the Buffalo district. The presentation speech was made by Charles W. Goodyear, vice-president of the Buffalo & Susquehanna Iron Company.

Arthur M. Parker, secretary and treasurer of the Detroit Range Boiler Company, Detroit, Mich., has been elected a director of the Detroit Iron & Steel Company, to fill the vacancy caused by the resignation of Mr. Green.

Harris Whittemore, president of the Naugatuck Malleable Iron Company of Naugatuck, Conn., has been elected a director of the Century Bank of New York.

Ralph Crooker, Jr., Farmers Bank Building, Pittsburgh, has been appointed consulting engineer for the Jones & Laughlin Steel Company, of that city. Mr. Crooker will have entire charge of all improvements to be made by this concern. The three-high blooming mill recently installed by Jones & Laughlin Steel Company has been completed, and work has been started on the new billet and bar mill.

H. Lueg, who was president of the Düsseldorf Exposition last year, and who is at the head of large interests in Westphalia, has been traveling in this country for a month accompanied by his son, Ernst Lueg, an engineer. The party sails to-day.

Thomas Lynch, president of the H. C. Frick Coke Company of Pittsburgh, will sail for Europe on May 30 for an extended trip.

J. C. Barrett, superintendent of furnaces of the Carnegie Steel Company in the Youngstown, Ohio, district, was seriously injured at the Ohio works on Monday afternoon, May 18. His skull was fractured, and he may not recover.

At a meeting of the Board of Directors of the American Steel Foundries Company, held May 19, Charles M. Schwab and E. H. Gary were elected directors, vice H. K. Wood, and Kenneth K. McLaren, resigned.

**The Queen City Shaper Company.**—With a nominal capitalization of \$25,000, a company were recently organized in Cincinnati under the style of the Queen City Shaper Company. The organization has just been completed, William Rohche being elected president and A. Watcher secretary and treasurer. The principal stockholders are R. K. Le Blond, C. J. McDermott and John Newton. The company have taken over the property located at Sycamore and Webster streets, Cincinnati, which was originally occupied by the G. A. Gray Company and more recently by the Cincinnati Shaper Company. The new company will build crank shapers and their attachments exclusively. At present patterns are being made for machines of 16, 20 and 24 inches stroke. This range will be increased as the business demands. The machines will embody several novel features, the designs having been made with the increasing demand for electrically driven machines in view. The machines will also be of sufficiently rigid design to employ the new high speed tool steels. The plant is now being fitted out with modern machine shop equipment, including special devices for producing the machines with the greatest accuracy and economy.

No change was made in the puddling and finishing scales at the conference held in Youngstown last week between representatives of the Amalgamated Association and James H. Nutt, of the Republic Iron & Steel Company. Puddling remains at \$6.12½ a ton, and the finishing rate 71.4 cents per ton on a 1.7 cent card rate.



## The Mossberg & Granville Mfg. Company Bankrupt.

PROVIDENCE, R. I., May 19, 1903.—The Mossberg & Granville Mfg. Company have suspended business, having been petitioned into bankruptcy by some of the larger creditors. It is understood that the action of these creditors is friendly, the purpose being to wipe out the corporation's indebtedness preliminary to reorganizing the business. It had been hoped that the reorganization would be accomplished without recourse to so severe a measure as bankruptcy, but this was not possible, owing to the unwillingness of some of the stockholders to assent to it. A part of the abandoned plan was to move the business to the site of the Phenix Iron Foundry of Providence, recently sold at auction by the Textile Machinery Company. In fact, one of the reasons why the business has not been carried on at a profit was that the shops were not suitable for the purpose, being in an upper story of a general manufacturing building. Moreover, the rent was larger than usually paid in similar lines of manufacture. The company's lines are power presses, drop hammers, rotary swaging machines, rolling mills, wire drawing machinery, wire flattening mills, and roller and thrust bearings, and machinery for the manufacture of jewelry, this latter line having been the most profitable, it is said. An attempt to manufacture typewriters was largely responsible for the failure, as will be seen in the following circular, which was received by the stockholders to-day:

"A petition in bankruptcy has been filed against the company in the United States District Court for the Southern District of New York, where the company have their principal place of business. It is a New York corporation. The company were incorporated in 1896. The securities issued are about as follows: Preferred stock, \$200,000; common stock, \$500,000; deferred income bonds, \$300,000; liabilities other than income bonds, \$69,000; total, \$1,269,000.

"The company's business is manufacturing machinery and the factory is at Providence, R. I. The assets other than patents have been thought to be worth about \$200,000, to a going concern, but would probably bring less at a forced sale at auction. The manufacture of typewriters, which was formerly part of the company's product, is responsible for the condition of the company. Although this part of the business was abandoned in the summer of the year 1900, the loss had been so great that recovery was impossible."

The following notice has been sent to creditors:

"A plan of reorganization and for providing new cash was recently laid before the parties interested; it has, however, been found impossible to secure unanimous co-operation in this plan at the moment. The directors, therefore, have reluctantly decided to shut down for a time, and certain creditors who desire to carry through a reorganization in a way that will be advantageous and fair for all parties, have united in a petition in bankruptcy which will be filed at once. A meeting of creditors, of which you will receive due notice, will be held as soon as possible and a trustee in bankruptcy will then be appointed."

## Chicago Strikes.

(By Telegraph.)

CHICAGO, ILL., May 20, 1903.—Strikes affecting the iron and steel industry which have been called in the past few days are, briefly, as follows: Electrical workers and crane operators at the Allis-Chalmers plant and the blacksmiths' helpers, who repudiated the agreement. It is now understood that this latter difficulty, however, will be submitted to the officers of the Blacksmiths' Brotherhood.

Brass workers, buffers and polishers have signed an agreement with the Chicago Metal Trades Association, which it is hoped insures peace in that industry for at least one year.

Strikers at the Lassig plant of the American Bridge Company are endeavoring to involve other local departments and also to call a sympathetic strike at the large

mills of the company at Pittsburgh and throughout the East.

Gas workers dissatisfied with the arbitration settlement have again assumed a threatening attitude.

## Co-operative Profit Sharing and Striking.

There is a strike among the employees of the Hecla Iron Works of New York City, which serves as a striking illustration of the power which the unions hold over their members. This power is emphasized by the fact that the plant was operated under a co-operative system whereby many of the men shared annually in the profits of the business. About a week ago the men were called upon to decide as to whether they would stand by the union or the company in the profits of which many participated. They obeyed the dictates of their union. As a result, the entire plant has been shut down, and it has been decided to reorganize the company. Nils Poulson, the founder of the original firm of Poulson & Eger, and president of the present company, has decided that the labor unions have caused him enough worryment, and that he will retire from the active management of the concern. When the reorganization is effected the co-operative feature will be eliminated.

Seven years ago the firm were converted into a stock company, under the style of the Hecla Iron Works. They were capitalized at \$825,000, of which \$600,000 was reserved as 5 per cent. bonds, and the balance issued as stock. The earnings of one-half of the stock were set aside for the superintendents, foremen and other heads of departments, the apportionment being made according to the salary and length of service of the participant. So as to include others than the heads of departments, and so that all worthy employees could participate in the profit sharing plan, all employees recommended by their superiors were granted an annuity equal to the earning power of as much stock as their annual wages represented. The earnings of this stock never fell below 6 per cent., and ranged as high as 10 per cent. The stock of course carried no voting power, and was actually held by the original members of the firm, the employees reaping only the earnings.

The closing down of the works was directly due to a demand for a Saturday half holiday and a 50-hour a week schedule. The men also wanted the finishers to be paid at the rate of 36 cents an hour and helpers at the rate of 25 cents an hour. The subject of the Saturday half holiday came up about a year ago, the company compromising with a 5 per cent. advance in wages. The demands applied to the "inside men," or those engaged in the works. The company have been harassed by their "outside men," who are employed at erecting work on buildings constructed by the company, to the extent of paying laborers \$4 a day. When the "inside men," who were paid wages higher than those uniformly demanded by the union, and were also favored by the profit sharing system, listened to the commands of the union delegates Mr. Poulson decided that his liberal treatment had not been of much avail, and as enough of the men went on strike to prevent the operations of the various departments a complete shut down and general reorganization were decided upon.

**The Quincy Strike.**—For several weeks the machine shops in the city of Quincy, Ill., have been tied up by a machinists' strike. The cause of the trouble is the refusal of the Machinists' Union to submit the matter at issue to arbitration. The disagreement arose in the shop of the Quincy Engine Works, where a machinist left his work to go to Chicago under conditions which made it impossible for his employers to know how long he might be absent. Another union man was placed in his position, and when he returned to the city demand was made by his friends that he be put back to work. This the company refused to do. As a result the Machinists' Union ordered a strike, and in order to arrive at a settlement the company offered to submit the matter to arbitration. This the union refused to entertain. All other employers of machinists of the city immediately declared a lockout, and are now getting along as best they can with nonunion men. Frequent efforts to adjust matters have been made, but without result.

## MANUFACTURING.

### Iron and Steel.

The Parkersburg Iron & Steel Company, Parkersburg, W. Va., manufacturers of iron and steel sheets, have under advisement the erection of eight puddling furnaces, two charcoal furnaces and three knobbling furnaces.

The McKenna Brothers Brass Company, Limited, First avenue and Ross street, Pittsburgh, who are selling agents in the Pittsburgh district for Blue Chip steel made by the Firth-Sterling Steel Company of Pittsburgh, advise us that they are having a very large demand for this brand of tool steel, and that it is giving splendid satisfaction wherever used.

Work on the Buffalo & Susquehanna Iron Company's new plant at Buffalo, N. Y., is progressing steadily. The steel shells of four stoves and one draft stack are finished ready for the fire brick, and the shells of the remaining four stoves are completed with the exception of the domes, and the draft stack is up to about one-half its finished height. The work on the furnaces is advancing rapidly and Mr. Charles W. Goodyear, second vice-president, states it is expected the first of the furnaces will be completed and blown in during October. The steel frame work of the engine house is practically finished and the blowing engines are being installed. The electric cranes are also nearing completion.

Furnace I of the Edgar Thomson group of the Carnegie Steel Company, at Bessemer, Pa., was blown in last week, after having been relined and repaired. Furnace H has been taken out of blast and will be torn down and rebuilt on a larger scale. A new hoist will be added and many other important improvements made to the stack.

The Union Forge Company of Pittsburgh have applied for a charter and will engage in the manufacture of rivets, nuts and bolts.

The Toledo Furnace Company, Toledo, Ohio, have increased their capital stock from \$1,000,000 to \$1,350,000.

The Eastern Steel Company, Pottsville, Pa., have abandoned their intention to build blast furnaces and will purchase their pig iron from a corporation in which two of the men having large interests in the Eastern company hold a majority of the stock.

Two mills have recently been added to the plant of the American Tin Plate Company at Elwood, Ind., and four more are being built. This will make 32 mills at that point, constituting the largest tin plate works in the world. The New Castle, Pa., plant with 30 mills is the largest at present.

All of the iron mills of Central Pennsylvania are busy and some large outputs were reported for the week past. The Central Iron Works, Harrisburg, report the largest production in months; No. 2 mill, one of the largest east of Pittsburgh, having resumed after a shutdown of several weeks, due to the breaking of the great engine used to generate power.

The directors of the Woodward Iron Company, Woodward, Ala., have authorized the building of a new furnace, but nothing has been decided as yet with reference to its construction and capacity.

The New Philadelphia plant of the American Sheet Steel Company, at New Philadelphia, Ohio, has been declared an open mill, and is no longer under the jurisdiction of the Amalgamated Association. The charter of that organization is still retained by the minority employees.

The new plant of the Mariette Sheet & Tin Plate Company, at Mariette, Ohio, has been completed and started up. This company will manufacture sheets and tin plate. A. P. Bronson is treasurer.

At the annual meeting of the stockholders of the Cleveland Furnace Company, Cleveland, Ohio, held recently, the following directors were elected: Wm. A. Rogers, Archer Brown, D. B. Meacham, S. W. Croxton, Wm. G. Park. The directors elected the following officers: D. B. Meacham, president; S. W. Croxton, vice-president; C. Birdsall Smith, secretary and treasurer; D. T. Croxton, general manager. The furnace is being rapidly pushed to completion, and is expected to go in blast in July.

The Norwalk Steel & Iron Company, Incorporated, Norwalk, Ohio, manufacturers of high grade tool steel, have filed at Dover, Del., an amendment to their charter which makes provision for the division of preferred and common stock of the company. The original amount of the capital stock is \$1,000,000. Edward E. Erikson, consulting engineer of Pittsburgh, is general manager of the Norwalk Steel & Iron Company, Incorporated.

The Cadwallader Tin Plate Company, operating a dipping plant at Hazelwood, Pittsburgh, have secured options on some land adjoining their plant, and contemplate building open hearth furnaces, sheet bar and finishing mills, in order to roll their own black plate, which they now buy in the open market.

### General Machinery.

The Marion Steam Shovel Company, Marion, Ohio, are preparing plans for material enlargements to their plant.

James Bonar & Company, Incorporated, Frick Building, Pittsburgh, will handle a full line of pumps, manufactured by the National Steam Pump Company, Upper Sandusky, Ohio.

The Monitor Forge & Iron Company have broken ground at Sandusky, Ohio, on which to build a plant to manufacture drop forgings.

Butterfield & Co., Derby Line, Vt., and Rock Island, Canada, manufacturers of taps and dies, report an excellent business throughout the country, and, we are advised, have been obliged to make contracts subject to 60-day deliveries. A new building, 40 x 126 feet, three stories high, to replace an old and smaller structure which was destroyed by fire last year, has been erected and equipped with a large amount of new machinery. A number of new machines will also be added the coming season. The increase in their business, they state, is largely due to the popularity of their Derby screw plate, of which, with their other goods, they ship large quantities to all parts of the world.

The Akron Machine Company of Akron, Ohio, have gone into voluntary bankruptcy, and A. H. Commins has been appointed receiver. It is said this financial trouble was largely the result of the failure of the Aultman-Miller Company of Akron.

Samuel Wallace, White Haven, Pa., founder and machinist, is about to put on the market a new shaker screen for coal, sand or any other material requiring screening. It is claimed to need less power to operate and give quicker results than any other screen, being simple in construction and self contained.

A syndicate of Indianapolis and Cleveland men have obtained control of the Jenney Electric Mfg. Company, Indianapolis, Ind. They include Mortimer Levering, president of the Columbia National Bank, and A. A. Barnes president of the Udell Works, Indianapolis; George M. Conner, recently of Detroit and manager of the Coldwater Portland Cement Company of Michigan; Wm. Greif of Greif Brothers' Cooperage Company, Cleveland; E. C. Kinney, Cleveland; Geo. W. Barnes, Cleveland, secretary of the Weldeman Company, wholesale grocers, and Chas. D. Jenney of Indianapolis. A few weeks ago the Jenney company bought land adjoining their present plant and increased the capital stock from \$80,000 to \$450,000. It was stated then that the company's future plans were not ready for announcement. They have not been able to take care of all orders received for a long time. The capacity will now be trebled at an expense of \$150,000. Three additional buildings will be erected. It is their intention to have one of the largest electrical supply plants in the country. Chas. D. Jenney will remain as president, Wm. Greif will be vice-president, and Geo. M. Conner secretary.

S. G. Barker & Sons of Scranton, Pa., manufacturers of railroad scales, mining machinery, iron and brass castings, report business so heavy that the plant will shortly have to be enlarged to meet incoming orders.

The Goodell Mfg. Company of Greenfield, Mass., a new corporation, have built a modern machine shop, the purpose of which they are not yet ready to tell. The building is one story high, 42 x 100 feet. Some tools have already been purchased and installed but the machinery equipment is not yet complete.

W. E. Canedy, principal stockholder in the Canedy-Otto Company, Chicago Heights, Ill., has sold his interest to a number of capitalists, prominent among whom are J. W. Thomas, superintendent of the Inland Steel Company, who has been elected president of the company, and E. R. Davis, cashier of the First National Bank of Chicago Heights, who is one of the directors. The business of the company will be conducted as heretofore, with the same office force and salesmen, and no changes have been made in the other officers of the company, including Mr. Elliott, vice-president; John H. Hood, secretary, and F. B. Furniss, general manager and treasurer. The Canedy-Otto Company are organized under the laws of Illinois with a capital stock of \$125,000, and manufacture forges and blowers. Many improvements in their plant are contemplated.

The Automatic Machinery Company of Greenfield, Mass., are occupying their new shops. The main building is 120 feet square, with a wing 25 x 40 feet.

The American Tap & Die Company of Greenfield, Mass., started business last December, but already orders are coming in faster than they can be filled. New machinery has been installed from time to time, but the machine shop equipment is not yet up to the needs of the business.

The Indianapolis Electrical Mfg. Company have been incorporated at Indianapolis to manufacture electrical equipment for street railway and interurban lines. The incorporators are Henry E. Kattman, Ansel Fatout and C. E. Morgan, all of Indianapolis. The company are at present looking for a 40-acre site for their proposed plant.

Machine shop tools are required by the George T. Gifford Iron Works Company, Tifton, Ga. The company were recently organized with a capital stock of \$10,000 and have taken over the boiler making business of George T. Gifford & Co., to which they will add general foundry and machine shop work. The incorporators are Geo. T. and G. W. Gifford, J. A. Ritchey, P. D. Phillips and A. B. Hollingsworth.

In order to get increased shop facilities to meet the demand for their ice and refrigerating machinery, the Buffalo Refrigerating Machine Company have become affiliated with the Marine



Engine & Machine Company, Harrison, N. J., where their principal office and works will be located, instead of at Buffalo.

Maunling, Maxwell & Moore and the Tucker Tool & Machine Company, both of New York, secured the orders for the equipment of the new machine shop of the Embree Iron Company, at their Embreville Furnace, Embreville, Tenn.

The Morgan Electric Machine Company, Chicago, Ill., manufacturers of electrical machinery, will move their plant about June 1 to East Chicago, Ind., where they will have at least double the present capacity. The new buildings include a machine shop 80 x 200 feet, third rail department, blacksmith shop 50 x 200 feet, and a power house, 40 x 50 feet. The main building will be served by an 8-ton electric crane, and the machinery will be operated by electric motors.

Kenney & Co., Scottdale, Pa., manufacturers of engines, boilers, coal mine and coke oven machinery, have increased their capital stock from \$125,000 to \$200,000, to provide facilities for taking care of their increased business. Though they recently built an addition 30 x 180 feet, more room is needed for sheet iron work and it is probable that another good sized addition will be erected.

A complete equipment of machinery is required by the Eclipse Car Fender Company, Vulcan Building, Cleveland, Ohio, for their proposed plant.

The McDonald Iron Works Company, Black River Falls, Wis., have installed a trip hammer at their works, which has been made in accordance with the designs of N. M. Thompson, one of the members of the company. It is not the intention, however, of making this hammer for the general market.

The Mellus-Steele Machine Works, Gloversville, N. Y., have purchased the foundry of Byard McGuire, and will operate it in connection with their machine business, which they have moved into the newly acquired building. A number of improvements will be made and the capacity increased considerably. The company make a specialty of leather machinery of every description.

The H. B. Smith Machine Company, Smithville, N. J., will enlarge their plant.

The works of the Sebring Forging Company, at Sebring, Ohio, have been placed in operation. The company will make a specialty of car forgings, drop forgings, eye bolts from  $\frac{1}{2}$  to 3 inches square, hexagon or special shaped heads, upset rods with turn-buckles, tie and anchor rods, &c.

The Damascus Brake Beam Company of East St. Louis, Ill., have secured a site at Youngstown, Ohio, and will build a plant there. The main building will be 60 x 200 feet. The new plant will be on the line of the Erie Railroad, which will run a switch into the works. A good deal of the machinery for the new plant will be furnished by Youngstown concerns. The company state that they have contracts for fully 25,000 tons of brake beams.

#### Power Plant Equipment.

The White Swan Mines Company, Baker City, Ore., will install an electric plant at Eagle Valley, 35 miles distant, to be operated by water power, and will transmit the electricity to the mines for power purposes and for operating a line of electric cars in that city. The railway will be in operation within 90 days, and power will be secured temporarily from the company who supply the city with light.

Bartz, Wygant & Brown, Hornellsville, N. Y., manufacturers of dynamos, motors, gas and gasoline engines, mill supplies and general machine work, have incorporated. The new company have purchased larger works, which will enable them to double their capacity. They report the outlook for business very encouraging.

The Hodge Boiler Works of East Boston, Mass., are building a standpipe 30 feet in diameter and 52 feet high for the Naval Coaling Station at Bradford, R. I. A new boiler is being put into the steamer "Francis J. Ward" of Boston, and another has just been installed in the steamer "Annie Gallup" of Tiverton, R. I. A large order for tanks and condensers has recently been filled for Lever Bros. of Cambridge, Mass.

The Leighton Foundry & Machine Company, Leighton, Pa., manufacturers of steam and hot water radiators and boilers, have had all the work they could attend since their organization last July. Henry Miller is president; Charles L. Swartz, treasurer and superintendent, and Howard Seaboldt, secretary.

Engineers are at work on designs for the machinery for the power plant to be erected on the Van Duzen River by the Humboldt Light & Power Company of Bridgeville, Cal. Arrangements have been made for developing 2000 horse-power to supply power to Eureka and other points in the Eel River Valley. Five other plants will follow, aggregating 10,000 horse-power. C. Alvin Baird, vice-president, is in charge of the work.

The Westinghouse Electric & Mfg. Company, Pittsburgh, secured the contract for the motors, generators and switchboard for the 300 horse-power plant of R. C. Fisher, Port Morris, N. Y. C. O. Mailoux of New York was the engineer in charge.

#### Foundries.

The recently incorporated Eureka Foundry Company, Rochester, N. Y., are erecting a plant for the manufacture of heavy

machinery castings, the main building being 75 x 120 feet. Most of the equipment, including a cupola and 10-ton traveling crane, with 50 feet span, was secured from the Whiting Foundry Equipment Company of Harvey, Ill.

The Union Mining Company, Mount Savage, Md., have purchased the equipment for their new foundry, consisting of a 10-ton traveling crane, five 4-ton hand traveling cranes and a few mold presses.

Arnold & Co., iron founders, Norwalk, Conn., have incorporated with a capital stock of \$50,000, as the Arnold Company. The management continues the same as before.

The Kelly Foundry & Machine Company, Goshen, Ind., will build an addition, 40 x 125 feet, to their foundry. No additional equipment will be required.

The long pending consolidation of the South Baltimore Car Works, the South Baltimore Foundry and the Ryan & McDonald Mfg. Company, all of Baltimore, Md., is thought now to be an assured fact. The report of the committee appointed to work out the details has been received and the plans for the merger of the three industries will be presented to the stockholders for their approval May 26. If the consolidation is approved the new company will be incorporated as the South Baltimore Steel Car & Foundry Company, and will have a capital of \$1,000,000.

The Toledo Casting Company, Toledo, Ohio, have started up their new foundry. The output will be brake shoes and railroad specialties.

A new company are being organized at New Castle, Pa., to build a steel casting plant in that city. J. P. H. Cunningham, Chas. J. Kirk, and others are interested in the enterprise.

A party of capitalists from Philadelphia have purchased a plot of ground 50 x 200 feet in dimensions, from G. E. Smedley, in Morton Borough, Chester County, Pa., and will erect thereon a brass foundry at an outlay of \$10,000. The plant will employ 35 hands.

It is understood that the Whittier Elevator Company, one of the constituent parts of the Otis Elevator Company, are to rebuild their foundry at East Boston, Mass., recently destroyed by fire. It was at first supposed that the company would use the space occupied by the foundry for extending their machine shop, and centralize the foundry work at Yonkers, N. Y., where the Otis Company have a large foundry.

The Walworth Mfg. Company are building a new brass and iron foundry at their plant at South Boston, Mass. The building will be 80 x 300 feet. The present foundry will be retained for light work and the new one will be given over to heavy castings. The building will be equipped with a traveling crane and the other labor saving apparatus of the modern foundry.

The Union Foundry & Machine Company, Catsaugua, Pa., are about to double their output by erecting a new cupola with capacity of 20 tons per hour, a blower displacing 68 cubic feet of air per revolution and a 60 horse-power electric motor. Their plant is entirely operated by electricity. Further addition to the plant will be made in the near future.

#### Bridges and Buildings.

The Riverside Bridge Company of Wheeling, W. Va., are pushing work rapidly on their new plant, and expect to have it in operation in August next. A large part of the machinery for this new works is being furnished by the Hilles & Jones Company of Wilmington, Del.

The McClintic-Marshall Construction Company of Pittsburgh, with works at Rankin and Pottstown, Pa., have secured a contract for the building of ore and coke bins for the Buffalo & Susquehanna Iron Company, at Buffalo, N. Y., calling for about 1000 tons of structural steel. They also have a contract for the building of a large frame shop for the Pennsylvania Railroad Company, at Altoona, Pa., involving about 1400 tons.

#### Fires.

The outlying buildings of the Bradford Machine Tool Company, Cincinnati, Ohio, were burned May 10, causing a loss of about \$10,000. The greatest loss was in the pattern shop, where many costly tools and patterns were destroyed. A new frame building, which was only completed a week or two ago, and which was to be used for machine work, was also swept away.

The plant of the Whitney Electrical Instrument Company, at Penacook, N. H., was destroyed by fire May 15. The loss is about \$50,000.

The Terrell Iron Works, Terrell, Texas, were recently destroyed by fire, entailing a loss of \$10,000.

The zinc plant of the Utah Metals Company at Park City, Utah, was destroyed by fire May 14. The loss is \$125,000.

The Spring Lawn Mills, near Fairhill, Md., of the Megargee Paper Mills Company of Philadelphia, were destroyed by fire May 12. The loss is very large.

The Day Metallic Mfg. Company's plant at Detroit, Mich., was recently burned, causing a loss of \$6000.

The plants of the Glenshaw Glass Company and the Wittmer Brick Company, at Glenshaw, Pa., were destroyed by fire May 19. The loss is about \$50,000.

The plant of the Atlas Glass & Metal Company, Washington, Pa., was destroyed by fire May 13. The loss will reach \$125,000.

A fire at Milwaukee, Wis., May 19, destroyed the plants of the Milwaukee Commutator Company, Milwaukee Automobile Works, Milwaukee Brass Company and Jacob's Copper Shop. The loss is estimated at about \$125,000.

#### Hardware.

At a recent meeting of the stockholders of the Withington Fence Company, Adrian, Mich., it was decided to change the name of the concern to the Adrian Wire Fence Company. At this meeting two directors were also elected, D. H. Hayes of Chicago and David Metcalf of Adrian.

The Emmert Mfg. Company, Waynesboro, Pa., are having such a large demand for their Emmert universal vise that they have found it necessary to erect two new buildings, one of two stories, 40 x 68 feet, and another of one story, 45 x 125 feet.

The L. S. Starrett Company, Athol, Mass., are occupying the first and fourth floors of the main building of the new section of their plant. The first floor is given up to the polishing department and the fourth floor to the micrometer and hardened square departments. It is not entirely decided to what purposes the two intermediate floors of the building will be put, excepting that the tool room will occupy one floor. Probably the grinding department will go into this building also.

The New Home Sewing Machine Company, Orange, Mass., are erecting a new building which will be occupied by their needle department. The building will be 57 x 80 feet on the ground and four stories. This department will have a capacity of 100,000 needles a day when in full operation. At present the company are turning out 40,000 needles daily. The removal of this department into new quarters will give additional room for other departments of the business.

The Athol Machine Company are rapidly developing their lines on a new basis under the new management, which went into effect a few months ago. The company manufacture small tools and such hardware specialties as vises and levels. The officers are: S. E. French, president; D. T. Bates, vice-president, and F. S. Ewin, secretary and treasurer.

The Robertson Mfg. Company have been incorporated at Buffalo, N. Y., with a capital stock of \$12,000, to manufacture hardware specialties, and will commence business in the factory formerly occupied by the Union Mfg. Company on Grant street.

Theo. J. Ely Mfg. Company, manufacturers of hardware specialties, Girard, Pa., report business thus far this year as exceeding that of 1902, which was the best in their history. Owing to the large increase in their business, they are expecting to make extensive additions to their plant, and have already put in some new improved machinery.

Peerless Electric Company, Warren, Ohio, have just completed a new brick factory, three stories high, 80 x 210 feet, with detached brick power house, 40 x 80 feet. The building is of the most modern design, with well lighted galleries, and is intended to be used for the construction of direct current power motors. The manufacture of Peerless fan motors and Peerless transformers will be continued in the old plant.

#### Miscellaneous.

The Waterloo Prospecting & Mining Company, composed of residents of Waterloo and Sun Prairie, Wis., and incorporated with a capital stock of \$300,000, after nearly eight months' work, have at last struck ore at the iron mine at Medina, Wis. The ore was discovered at a depth of 294 feet. The vein is supposed to be 100 feet wide and the ore is said to be of good quality. Heavy mining machinery is being installed and mining operations will begin in a short time. The officers of the company are: President, H. E. Kepler; vice-president, C. Scherneck; secretary, F. J. Rood, and treasurer, Victor Wagner. The officers, together with Herman Wagner, constitute the Board of Directors.

The Canadian Miller Signal Company have been organized in Canada with a capital of \$1,000,000. The head office of the company will be in Welland, Ont. Among those interested are William M. German, M.P., of Welland, M. L. Failing and J. A. Kennedy of Buffalo, and Joseph Battle of Toronto, Ont. The company will manufacture and sell the Miller electric block railway signals in Canada.

In these columns April 30 an error was made in the name of the company who secured the contract from the First National Bank of Chicago for the steel office equipment. The order was secured by the General Fire Proofing Company of Youngstown, Ohio, who also received the contract from the American Insurance Company of Newark, N. J., for a large amount of steel furnishings.

Spencer Vandevanter of Marion, Ind., is at the head of a company of Eastern and Indianapolis capitalists, now organizing with \$500,000 capital to build a mineral wool plant at Marion, Ind., to manufacture mineral wool from limestone. The process is secret to a certain extent, but consists in part of melting limestone until it resembles long strings of glass, passing it through blowing machines and through the drying room,

where it emerges soft and flaky like asbestos. It will be the seventh factory of the kind in the country.

The Todd Mfg. Company, New Albany, Ind., manufacturers of Moch's steel hames, have purchased a 3½-acre tract of land, where they will erect a new plant, doubling their present capacity. The company have purchased the equipment of the Lithgow Foundry Company of Louisville, Ky., which they will install in the new plant.

The Marion Insulated Wire & Rubber Company have been incorporated with a capital stock of \$100,000, with Jas. L. Bailey, Robt. J. Spencer, Joseph Hulley, Lewis C. Lillard, Edmund S. Stewart, Merrill L. Lewis and Chas. Michaels as the Board of Directors. A large factory will be built in Marion, Ind., for the manufacture of insulated wire, rubber goods and electrical supplies.

The Jewell Furnace Company, Elkhart, Ind., have incorporated with a capital stock of \$10,000 for the manufacture of Jewell furnaces and sheet metal specialties. L. R. Boyle is president; B. A. Deffler, vice-president; H. J. Bostwick, secretary and treasurer, and W. C. Wolf, superintendent.

Eugene Fullner, Warmbrunn, Germany, who has the largest paper making machinery plant in Europe, recently visited the Reeves Pulley Company, Columbus, Ind., to negotiate for the rights to manufacture the speed varying device in Germany, Austria, Scandinavia and Russia. A French manufacturer is negotiating for similar rights in France.

The Weems-Lockwind Furniture Company, Greenwood, Miss., recently organized with a capital stock of \$100,000, will establish a factory, 70 x 200 feet, and are now in the market for equipment. Address P. O. Box 496, Atlanta, Ga.

The Buffalo Weaving & Belting Company have been incorporated at Buffalo, N. Y., with a capital stock of \$200,000. The directors are John Chase, Rufus Matheson and Robert Pomeroy of Buffalo.

The United Telegraph & Telephone Company have placed a large order for metallic telephones with the Eastern Telephone Company of West Chester, Pa., who have purchased and are operating the plant of the defunct Sun Electric Mfg. Company.

The Carbon Coal Company of Huntingdon, Pa., have asked for a charter for the "mining, shipping and selling of coal and the manufacture and sale of coke." The incorporators are William A. Jepson, J. Milton Payne, Byron C. Payne, George B. Olney and George F. Cant of Huntingdon.

The Chulaskey Iron & Cement Company, with A. L. Derry of Scranton as general manager, have been organized to take coal, iron and railroad ballast from the large cinder tip at Chulaskey, near Danville, Pa. The tip contains several million cubic yards of furnace refuse and a plant will be built capable of handling 150 tons a day. Later it is intended to erect a plant for the manufacture of cinder paving materials.

The machinery of the Kidder Motor Cycle Company of New Haven, Conn., has been purchased by the Springer Motor Works, a new corporation. Howard Springer of New York will have the management of the business. The Kidder Company were organized two years ago to manufacture a steam automobile. The business was abandoned about a year ago. The new company will take the Kidder machine and develop it along new lines. It will be necessary to abandon the present shop, which is located in a building recently purchased by the Andrew H. Hendryx Company. The Springer Company will take machine shop room somewhere in New Haven.

The Bridgeport Brass Company of Bridgeport, Conn., have recently shipped to England 22 miles of their phono-electric wire, to be used for street railway purposes. The company are filling orders for brass and copper tubing for installation in battle ships for the United States Navy. It takes about 400,000 pounds of this tubing for each battle ship.

The Bridgeport Deoxidizing Bronze & Metal Company are filling large orders for bronze castings for the Fore River Ship & Engine Company, the castings to go into the construction of the armored cruiser "Philadelphia."

The McConnell Asbestos & Covering Company, Pittsburgh, Pa., have been incorporated with \$200,000 capital stock by Frank A. Clark of Pittsburgh, F. A. Dohrman and J. A. McConnell of Allegheny.

The Columbus Wire & Iron Works, Columbus, Ohio, have re-incorporated as the Columbus Wire & Iron Works Company. The company's plant is a new one and no extensive improvements are contemplated.

The McCawley Heating Apparatus Company of Pittsburgh have been granted a charter. The incorporators are C. L. Drake, O. M. McElroy, Ernest W. Marlin and C. H. Huldeman, all of Pittsburgh.

The Alsen Cement Company, with headquarters at Hamburg, Germany, have purchased for \$48,000 a 160-acre tract of land near Easton, Pa., and will shortly ask bids for the erection thereon of a plant capable of producing 5000 barrels of cement per day.

The Coheco Mfg. Company of Boston, Mass., manufacturers of print cloths, are building a new shop at Dover, N. H.



The C. Rossier Mfg. Company, capitalized at \$60,000, have been incorporated at Buffalo, N. Y., and will manufacture auto-trucks and automobiles. They will erect a factory at Broadway and the New York Central Belt Line tracks.

The Morlock Automobile Company, recently organized at Buffalo, have purchased the plant formerly occupied by the Spaulding Automobile & Motor Company, on Chandler street, and are adding necessary equipment for the manufacture of their line of automobiles.

The Evans-Wills Steel Process Company, Pier 45, North Philadelphia, Pa., have incorporated with a capital stock of \$50,000. The J. W. Paxson Company of Philadelphia are the selling agents.

Toch Bros., New York, have purchased a site, 100 feet square, in Long Island City, upon which they will erect a plant for the manufacture of paint.

The Country Club Car Company, Boston, Mass., recently organized, have bought the J. H. Long Machine Company's property, 157 x 250 feet, where they contemplate the erection of a larger building.

W. K. Mitchell & Co., Philadelphia, Pa., steam engineers and contractors, will build a new shop, 123 x 178 feet, into which they will move their present plant. When settled in their new quarters the firm will be in a position to cut, fit and bend pipe of the largest size, and will have a greatly increased capacity for turning out their improved recessed lap joint, demand for which has been steadily increasing. What new machinery will be required has been arranged for. The shop will be electrically driven, power being supplied by a 200 horsepower boiler with high speed engine direct connected to 90-kw. generator. A Shaw electric crane of 50 feet span has been purchased from Manning, Maxwell & Moore of New York.

The Board of Trade of Moundsville, W. Va., are negotiating with a party of capitalists from New York and Pittsburgh, Pa., who are seeking a location for a steel car works.

The Marion Insulated Wire & Rubber Company, Marion, Ind., have been incorporated with a paid up capital of \$100,000, and will manufacture a full line of rubber insulated wire and cables and also soft rubber goods. The company contemplate the erection of a plant at Marion, which will consist of a three-story factory building, 60 x 150 feet, with an L 32 x 75 feet: an engine room, 36 x 60 feet, and a boiler room, 40 x 60 feet. It is probable that electric power will be used throughout. The directors of the company are James L. Barley, Robert Spencer, Joseph Hulley, Lewis C. Lillard, Edmond S. Stewart, Merrill L. Lewis, and Charles A. Michaels.

The Reese-Hammond Fire Brick Company of Bolivar, Pa., have purchased 1350 acres of fire clay land in Rowan County, near Owingsville, Ky., and will erect a large fire brick plant on the land.

The following is a list of clocks recently sold by the E. Howard Clock Company, Boston: Watchman's clock in the Bernon Mills, Providence, R. I.; chiming clock for the stable and tower clock for the gate lodge of Clarence Mackay, Roslyn, L. I.; four-dial striking tower clock, at Dennisport, Mass.; striking tower clock with four illuminated dials for a new school building in Newton, Mass., and special clock for the interior of the Frankford Real Estate, Trust & Safe Deposit Company, Philadelphia, Pa.

The Pullman Steel Ventilator Company of York, Pa., have accepted the contract for equipping the new Duke street school building with their ventilating system. The company are enjoying a season of exceptionally large orders.

The city of Lancaster, Pa., has almost completed the task of raising money to secure for that city a plant of the Wheel Within a Wheel Company of Lake View, N. J., of which George Pope is president. The company have for 18 months been manufacturing an improved automobile equipped with what is known as a French Pascal motor. The new plant will be located on land owned by the Lancaster Development Company.

**Certificates of Recommendation.**—The National Metal Trades Association have adopted a system of issuing "Certificates of Recommendation" to employees who have proven their loyalty to employers during periods of stress. The certificates are issued under the following rule: That no application for certificate shall be issued except to men who are good workmen, of fair character, who have proven their loyalty to their employers by being faithful to them during labor troubles. A circular to this effect has just been issued to members of the National Metal Trades Association, together with a request that men bearing such certificates be shown preference wherever possible. The certificates which have been issued thus far have gone principally to Cincinnati employees, who have gone out to other cities which were in the throes of strikes at the time. The holders have been actively expounding the benefits derived through the certificates and the Cincinnati headquarters of the association are being overrun by applicants for them.

### The Chicago Pneumatic Tool Company.

The directors of the Chicago Pneumatic Tool Company held a special meeting in New York on the 15th inst. The controversies heretofore existing between certain stockholders, which have been the source of much gossip, have been adjusted and finally settled to the satisfaction of all. At this meeting the business affairs of the company were fully considered and found to be in satisfactory condition. The outlook for the future is most promising. The company's tools have become an established and necessary factor in the great iron construction and stone industries of the country, and the field for their use is constantly widening and the demand therefor is increasing each month. The European business is also in a very satisfactory condition; the field is a most promising one. The great shipyards of Europe are just awakening to the fact that the use of pneumatic tools is no longer an experiment, but a necessity in ship construction.

The business in Europe is conducted by the Consolidated Pneumatic Tool Company, an English corporation, the stock of whom is all owned by the Chicago company. The European business is growing so rapidly that it is found necessary to increase the company's shop facilities and their working capital. To that end a new factory is now in course of construction in Scotland. Although it was once thought advisable to sell some of the unissued stock of the English company to the foreign public, wherewith to raise the necessary funds for the needed extensions and improvements, the directors of the Chicago company are so impressed with the importance of the foreign situation that they believe it the best policy to husband the resources of the Chicago company, so as to enable them to keep all the stock in the English company and thereby control a source of great revenue in the near future.

In the consideration of the domestic business situation of the Chicago company the increasing demand upon their working capital by reason of their growing business was recognized, and although the earnings of the company have been, and are, large enough to permit the payment of a dividend at the rate of 8 per cent. per annum, yet it was thought consistent with conservative management to create a larger surplus. Accordingly for the current year it was thought to be the best policy to fix the dividend at the rate of 7 per cent. per annum, and it was believed that in the end this policy will prove most satisfactory to the stockholders. By so doing the company on the dividend question are brought in line with the great industrial enterprises of the country which enjoy the largest share of public confidence. Therefore for the first quarter of the current year, ending March 31, a dividend of 1½ per cent. is declared, payable on June 5 to stockholders of record May 25.

At the annual meeting of the stockholders of the Struthers Furnace Company of Struthers, Ohio, held at the main office at Cleveland, Ohio, the following directors were elected for the ensuing year: W. C. Runyon, J. B. Stubbs, A. Grossman, Geo. L. Fairbank and S. A. Richards. The directors elected the following officers: W. C. Runyon, president; J. B. Stubbs, vice-president; A. Grossman, treasurer; Geo. L. Fairbank, secretary; S. A. Richards, manager; David Tod, manager cement department.

A fire occurred in the plant of the Hoyt Metal Company of St. Louis, Mo., on Saturday night, which partially destroyed the building, 50 x 280 feet, used as a rolling mill. The adjoining building, 50 x 280 feet, was damaged, but not so seriously as to make it inoperative. The damage to the rolling mill is so serious that that department of the business will be stopped for 60 days. The manufacture of alloys will continue without interruption. The loss is approximately \$40,000, covered by insurance.

The continuous mill of the Mingo Works of the National Steel Company at Mingo Junction, Ohio, has been remodeled and is now well equipped to handle sheet and tin plate bars. The works have just been started on these.

## The Iron and Metal Trades.

The tone of the market is easier and the tendency in many branches is downward, but it is far from being in the panicky condition which interests outside and remote from the trade represent it to be.

As for Pig Iron, the basis of the entire industry, the situation is working into better shape; we are abandoning an abnormal in order to return to a more normal condition of affairs. At first the Anthracite Coal strike and later a more potent cause—the freight blockades—caused an acute scarcity which drove values to figures so high that even importations were possible on a fairly large scale. At the same time costs went skyward, chiefly through the extraordinary rise in Coke. That fuel has dropped back and we learn that Coke has sold at under \$3 per ton at oven, as compared with the famine price of \$10 and upward during the fall and winter. In fact, Coke ovens are now being put out, and it is well known that a great deal of capacity is still to enter the ranks.

The lowering of Foundry and Forge Irons is therefore a return to normal conditions, the only puzzle for the moment being at what price buyers and sellers will come together. Our reports from the leading distributing centers clearly show that the common ground has not been found and that values are still descending in order to seek it.

Importations seem still to be possible. The sale of a lot of 5000 tons of Middlesbrough at a shade under \$17 is reported, but it is contended that this is a resale while the Iron was already afloat.

Many Pig Iron merchants note that consumers are still calling impatiently for Pig Iron due on contracts, so that they appear to be keeping themselves bare of stock while waiting for developments in prices until contracts for the third and fourth quarters can be placed.

It is understood that negotiations have been proceeding between the United States Steel Corporation and the Valley furnacemen for a large block of Bessemer Pig for the second half of the year. These negotiations have not yet been concluded.

The market is rather quiet in Steel, East and West, but it is a fact that additional sales of moderate size of foreign Billets are still being made, although at slightly lower prices. There is some talk, too, of cheap offerings of foreign Steel Rails.

Reports from the various finished branches are somewhat conflicting. The Iron Bar trade is in a disturbed condition, East and West, and prices in some sections are getting down close to Steel prices. The disturbances in the building trades have affected Sheets, Wire Nails, Pipe to a moderate extent. But on the whole the demand for Merchant Pipe has been extraordinary, without however benefiting those much who depend upon purchased raw or intermediate materials.

In the heavier materials Structural Steel is enjoying a very large tonnage, and week after week keeps the crowded order books well filled up. In the Plate trade the capacity has very heavily increased during the past year, and it takes a tremendous tonnage to keep the plants supplied with adequate work.

The Tin Plate trade is enjoying a rush of work never paralleled in the history of this branch of manufacture in this country. Conferences over next year's wages scale have been going on for a week in this city, and are still in progress. Everything will probably be settled to-day and an increase in the maximum limit of product will be granted by the men.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

May 20, May 13, Apr. 22, May 21,  
1903. 1903. 1903. 1902.

### PIG IRON:

|   |         |         |         |         |
|---|---------|---------|---------|---------|
| Foundry Pig No. 2, Standard, Philadelphia ..... | \$19.50 | \$20.25 | \$21.25 | \$19.75 |
| Foundry Pig No. 2, Southern, Cincinnati .....   | 18.75   | 19.25   | 20.25   | 18.75   |
| Foundry Pig No. 2, Local, Chicago .....         | 20.00   | 20.00   | 22.80   | 21.00   |
| Bessemer Pig, Pittsburgh .....                  | 20.10   | 20.00   | 20.85   | 21.00   |
| Gray Forge, Pittsburgh .....                    | 19.75   | 19.75   | 20.25   | 19.75   |
| Lake Superior Charcoal, Chicago .....           | 24.00   | 24.00   | 25.00   | 23.00   |

### BILLETS, RAILS, ETC.:

|  |        |        |        |       |
|--|--------|--------|--------|-------|
| Steel Billets, Pittsburgh .....        | 30.50  | 30.50  | 30.50  | 32.00 |
| Steel Billets, Philadelphia .....      | *28.00 | *28.50 | *29.50 | Nom.  |
| Steel Billets, Chicago .....           | 32.50  | 32.50  | 31.25  | ....  |
| Wire Rods, Pittsburgh .....            | 37.00  | 37.00  | 37.00  | 37.00 |
| Steel Rails, Heavy, Eastern Mill ..... | 28.00  | 28.00  | 28.00  | 28.00 |

### OLD MATERIAL:

|                                     |       |       |       |       |
|-------------------------------------|-------|-------|-------|-------|
| O. Steel Rails, Chicago .....       | 17.00 | 18.25 | 18.50 | 17.50 |
| O. Steel Rails, Philadelphia .....  | 21.50 | 21.50 | 21.50 | 21.00 |
| O. Iron Rails, Chicago .....        | 23.50 | 24.00 | 24.50 | 24.00 |
| O. Iron Rails, Philadelphia .....   | 24.50 | 24.50 | 25.00 | 24.50 |
| O. Car Wheels, Chicago .....        | 22.50 | 23.00 | 24.00 | 20.00 |
| O. Car Wheels, Philadelphia .....   | 24.00 | 24.00 | 24.00 | 19.50 |
| Heavy Steel Scrap, Pittsburgh ..... | 21.00 | 21.50 | 21.50 | ....  |
| Heavy Steel Scrap, Chicago .....    | 17.00 | 18.25 | 18.50 | 17.50 |

### FINISHED IRON AND STEEL:

|                                       |       |       |       |       |
|---------------------------------------|-------|-------|-------|-------|
| Refined Iron Bars, Philadelphia ..... | 1.80  | 1.85  | 1.93½ | 2.00  |
| Common Iron Bars, Chicago .....       | 1.75  | 1.80  | 1.80  | 1.85  |
| Common Iron Bars, Pittsburgh .....    | 1.80  | 1.85  | 1.85  | 1.80  |
| Steel Bars, Tidewater .....           | 1.75  | 1.75  | 1.75  | 1.80  |
| Steel Bars, Pittsburgh .....          | 1.60  | 1.60  | 1.60  | 1.60  |
| Tank Plates, Tidewater .....          | 1.80  | 1.80  | 1.85  | 1.95  |
| Tank Plates, Pittsburgh .....         | 1.60  | 1.60  | 1.60  | 1.60  |
| Beams, Tidewater .....                | 1.73½ | 1.73½ | 1.73½ | 2.00  |
| Beams, Pittsburgh .....               | 1.60  | 1.60  | 1.60  | 1.60  |
| Angles, Tidewater .....               | 1.73½ | 1.73½ | 1.73½ | 2.00  |
| Angles, Pittsburgh .....              | 1.60  | 1.60  | 1.60  | 1.60  |
| Skelp, Grooved Iron, Pittsburgh ..... | 2.00  | 2.05  | 2.00  | 2.22½ |
| Skelp, Sheared Iron, Pittsburgh ..... | 2.10  | 2.10  | 2.05  | 2.25  |
| Sheets, No. 27, Pittsburgh .....      | 2.65  | 2.65  | 2.65  | 2.95  |
| Barb Wire, f.o.b. Pittsburgh .....    | 2.60  | 2.60  | 2.60  | 2.90  |
| Wire Nails, f.o.b. Pittsburgh .....   | 2.00  | 2.00  | 2.00  | 2.05  |
| Cut Nails, f.o.b. Pittsburgh .....    | 2.15  | 2.15  | 2.15  | 2.05  |

### METALS:

|   |       |       |       |        |
|---|-------|-------|-------|--------|
| Copper, New York .....                                    | 13.75 | 14.75 | 15.00 | 12.37½ |
| Spelter, St. Louis .....                                  | 5.45  | 5.40  | 5.40  | 4.25   |
| Lead, New York .....                                      | 4.37½ | 4.37½ | 4.65  | 4.10   |
| Lead, St. Louis .....                                     | 4.15  | 4.22½ | 4.57½ | 4.00   |
| Tin, New York .....                                       | 29.45 | 29.65 | 29.50 | 30.00  |
| Antimony, Hallett, New York .....                         | 7.00  | 7.00  | 7.00  | 8.00   |
| Nickel, New York .....                                    | 40.00 | 40.00 | 40.00 | 50.00  |
| Tin Plate, Domestic, Bessemer, 100 pounds, New York ..... | 3.99  | 3.99  | 3.99  | 4.19   |

\* Foreign.

## Chicago.

FISHER BUILDING, May 20, 1903.—(By Telegraph.)

Resales of Pig Iron by consumers drawing independent furnaces into competition are said to be responsible for the low prices made for Pig Iron during the past two weeks, and the recent purchase by a car company, which is believed to have broken the market, is said to have been of this character, the Iron originally having come from a Wisconsin furnace and resold by a manufacturer through furnace agents. Very irregular and low prices prevailed up to Tuesday morning, when a number of independent furnaces withdrew quotations and the market closed on a much firmer basis. The break in Scrap Iron was largely sympathetic with the drop in Pig, and this has been further accentuated during the week, being also reflected in the market for Bar Iron, a further decline to 1.75c. to 1.80c., Chicago, being experienced. All Steel markets have been unusually dull, but there has been no disposition to lower prices, as there is still a scarcity of the intermediate products which can be turned to account in the manufacture of various Shapes. Steel Bars have been especially quiet, but the independent and largest interests alike have refused to make concessions from the previous basis. Contracts for several thousand tons of railroad bridge material have been closed, but Structural Material used in all other branches of manufacture has been exceptionally dull. Even Plates and Rails have been quiet, although there is some relatively large business pending. Sheets, domestic Billets and Cast Pipe have been slow, but Merchant Pipe and Boiler Tubes have sold quite well. Merchant Steel has been moderately active and Coke has been heavy, but with some increase in sales at lower prices at the ovens.



**Pig Iron.**—A halting, irregular and unsettled market has been experienced during the week, and notwithstanding the strong statistical position further weakness has been in evidence. The demoralization has resulted primarily from the liberal and in some cases pressing offerings by second hands, a number of resales having been made both for early delivery and for shipment in some cases during the third quarter of the year. Independent furnaces have been meeting this competition more or less, and the result has been even lower prices in some cases than were made two weeks ago. In the sale of Furnace Iron from the South, too, some shrewd tactics have been reported to have been exercised, such as the sale of Iron at or near the association basis at Birmingham, with a guarantee that freight rates should not be over a certain sum, equivalent to a cut of \$1 to \$1.50 from the present railroad schedule, which means that much reduction to purchasers on the delivered price. A number of local consumers are reported to have more than usually ample stocks in yards and are therefore disposed to hold off from purchasing until near the beginning of the second half of the year. Other purchasers, however, have been in urgent need of quick shipment Iron for delivery at works in various parts of the country, even as far East as Buffalo. A number of small lots, too, have been taken at this point for shipment into Ohio, Indiana and Michigan. The aggregate tonnage placed, however, has been light. As has been pointed out several times recently, there is more and more of a disposition to purchase Iron by analysis, which adds another element of uncertainty in making and establishing quotations on grade basis. Ignoring buyers' specifications, however, there is a fairly definite analysis for each of the various grades. Stove founders, Pipe makers and Radiator manufacturers have been among the prominent buyers of the week, while Implement manufacturers are making preparations to enter the market. The record of sales during the week shows a variation of over \$1 a ton. No. 2 Southern Foundry is reported to have sold as low as \$19.35 at South Bend, Ind., and \$19.40 at Joliet, Ill.; this means a basis of \$15.05 for No. 2, Birmingham, while No. 2 Soft has sold as high as \$16.25, Milwaukee. No. 1 Strong Virginia Iron, too, has sold as high as \$21 at South Bend and No. 1 Soft \$16.75, Milwaukee. A partial list of sales made during the past few days is as follows: Five hundred tons Southern No. 3 Foundry at \$14.50 and 500 tons Gray Forge at \$14, Birmingham, for shipment to a point in Ohio for delivery during the next four months, shipments to begin in June; 100 tons do. at \$15, Birmingham; 150 tons No. 2 Southern Foundry at \$19.40, delivered Chicago, May and June shipment; 500 tons No. 3 Foundry at \$19.75, delivered at a Michigan point; 300 tons of Virginia, 5 to 6 per cent. Silicon Iron, on the basis of \$23.10, Chicago delivery, at an Eastern point, monthly shipments covering the next three or four months, shipments to begin in June; 50 tons No. 2 Southern Foundry at \$19.35, delivered South Bend; 50 tons No. 1 Strong Virginia Iron at \$21, delivered South Bend; 400 tons Southern No. 1 at \$16.75, delivered at a Wisconsin point, for delivery during the next quarter; 350 tons Charcoal at \$25, Chicago, for prompt shipment. There have been offerings of both Standard and Malleable Bessemer Iron at about 50c. per ton under the prices quoted a week ago, Standard Bessemer being held at \$18 at Valley furnaces. At the close there is a much stronger tone, a number of independent furnaces which have made the lower prices having withdrawn from the market, temporarily at least, and advanced prices materially. With the exception of Bessemer Iron no revision is made of prices in the following table, but it will be noted that there has been some shading from the quotations given, the outside range being for prompt delivery and the inside for shipment during the third quarter of the year:

|  |                    |
|--|--------------------|
| Lake Superior Charcoal.....  | \$24.00 to \$25.00 |
| Local Coke Foundry, No. 1.....                                     | 21.00 to 22.00     |
| Local Coke Foundry, No. 2.....                                     | 20.00 to 21.00     |
| Local Coke Foundry, No. 3.....                                     | 19.00 to 20.00     |
| Local Scotch, No. 1.....   | 21.50 to 22.50     |
| Ohio Strong Softeners, No. 1.....                                  | 22.50 to 23.50     |
| Ohio Strong Softeners, No. 2.....                                  | 21.80 to 22.30     |
| Southern Silvery, according to Silicon.....                        | 21.85 to 23.85     |
| Southern Coke, No. 1.....  | 20.35 to 20.85     |
| Southern Coke, No. 2.....  | 19.85 to 20.35     |
| Southern Coke, No. 3.....  | 19.35 to 19.85     |
| Southern Coke, No. 1 Soft.....                                     | 20.10 to 20.60     |
| Southern Coke, No. 2 Soft.....                                     | 19.60 to 20.10     |
| Foundry Forge.....   | 18.85 to 19.35     |
| Southern Gray Forge.....   | 18.35 to 18.85     |
| Southern Mottled.....  | 18.10 to 18.60     |
| Southern Charcoal Softeners, according to Silicon.....             | 24.85 to 26.85     |
| Alabama and Georgia Car Wheel.....                                 | 28.85 to 29.85     |
| Malleable Bessemer.....  | 20.30 to 20.80     |
| Standard Bessemer.....   | 20.50 to 21.00     |
| Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon..... | 27.30 to 28.30     |

**Bars.**—Business in Steel Bars has continued quiet, orders being confined to small quantities, only one contract, and that for a little less than 1000 tons, being placed for next season's delivery by implement manufacturers. But while both new business and specifications on old contracts are not entirely satisfactory to the mills, there is such a demand for Steel in other shapes that there is no disposition to change the present policy and prices are fully maintained on the previous base. Bar Iron has developed further weakness. Lower prices have been accepted, sales being made on the

basis of 1.75c. to 1.85c., Chicago, but sales at the inside price have been small, while one contract of 1000 tons, which went to a car manufacturer, is reported to have been placed on the basis of 1.77½c., Chicago, for delivery during the latter part of the year. The following are the prices current, f.o.b. cars, Chicago, mill shipment: Bar Iron, 1.75c. to 1.85c.; Soft Steel Bars, 1.76½c. to 1.86½c.; Hoops, 2.16½c. to 2.26½c.; Angles, under 3 inches, 1.86½c. to 1.91½c., base. The merchant order trade has been light, but prices have not been changed essentially and are as follows: Bar Iron, 2.15c.; Soft Steel Bars, 2c. to 2.25c.; Angles, 2.25c., and Hoops, 2.40c., base, from store.

**Structural Material.**—The market has continued extremely dull, with no business of moment in sight from building contractors or from car manufacturers. For bridge work, however, about 3000 tons of the contracts pending and referred to several times recently have been placed, the American Bridge Company, the Pennsylvania Steel Company and the Wisconsin Bridge Company sharing in the railroad business. There is considerably more tonnage of the same character still pending. There has been no change in prices, which remain steady, as follows, mill shipment, Chicago: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 2c. to 2.25c. No improvement has been experienced in the demand from local stocks and the market has remained steady as previously quoted: Beams and Channels, 2¼c. to 2½c.; Angles, 2.25c. to 2.50c.; Tees, 2.30c. to 2.55c., at local yards.

**Plates.**—While business has been confined to small current orders and specifications on old contracts are not as numerous, there are one or two contracts of moment pending for quick shipment and there is a pressure from consumers, especially ship companies, for delivery on old contracts. Under the circumstances the market remains firm at the following prices, f.o.b. cars, Chicago, mill shipment: Tank Steel, ¼-inch and heavier, 1.75c. to 2c.; Flange, 1.85c. to 2.15c.; Marine, 1.95c. to 2.10c. The demand from local stocks has been only moderate, but prices have been well sustained as follows: Steel, ¼-inch and heavier, 2.15c. to 2.20c.; Tank Steel, 3-16-inch, 2.25c. to 2.30c.; No. 8, 2.30c. to 2.40c.; Flange Steel, 2.40c. to 2.50c., all f.o.b. warehouse, Chicago.

**Sheets.**—There continues to be a falling off in trade, and with the mills able to make prompt delivery of stock sizes the market is easier in tone, but without essential change in prices. The following are the prices current for Black Sheets, carload lots, Chicago, mill shipment: No. 10, 2.12½c. to 2.16½c.; No. 12, 2.22½c. to 2.26½c.; No. 14, 2.32½c. to 2.36½c.; No. 16, 2.42½c. to 2.46½c.; Nos. 18 and 20, 2.56½c. to 2.60½c.; Nos. 22 and 24, 2.66½c. to 2.70½c.; No. 26, 2.76½c. to 2.80½c.; No. 27, 2.86½c. to 2.90½c.; No. 28, 2.96½c. to 3.00½c. Small lots from store sell at 10c. to 20c. above mill prices. Galvanized Sheets are quiet and easier in tone, with some little trading on the basis of 75 and 10 discount, Pittsburgh, or 75 and 7, Chicago, mill shipment. From local stocks 75 and 2½ to 75 discount is asked.

**Cast Pipe.**—The market has lacked animation, business being confined to small mail orders from independent water and gas companies, there being still a dearth of orders from municipalities. But one contract of 1000 tons has been placed by the city of Milwaukee for 6's, 12's and 16's, and a small contract of a few hundred tons is pending in Ohio. The contract for Steel Pipe referred to a week ago, was placed by Kansas City, not Minneapolis, and there now seems to be doubt that even this contract will be maintained. Manufacturers of Cast Pipe continue to sell at the following prices, f.o.b. cars, Chicago, the outside prices being made for small lots: Four-inch, \$33 to \$34; 6-inch, \$32 to \$33; 8-inch, \$31.50 to \$32, and larger, \$31 to \$31.50, for Water, and \$1 per ton higher for Gas Pipe.

**Billets.**—There is still a scarcity of domestic Billets, which are wanted for rolling, and Bessemer are nominally held at \$30, Youngstown, for delivery during the summer months. On this basis \$32.50, Chicago, is asked, but there are few buyers over \$31.50. A sale of 6000 tons German Steel is reported to have been made by a local interest at tidewater at about \$28.50, for prompt shipment. There is a fair jobbing trade for Forging Billets, which is met at \$34 to \$38, Chicago, mill shipments, according to analysis, buyer and time of delivery. From second hands from \$1 to \$2 per ton over these prices is asked.

**Merchant Pipe.**—Each succeeding week shows an increased tonnage of Pipe for quick shipment and merchant sizes can be obtained from the largest interest, but large sizes are heavily sold ahead. Independent mills are still practically out of the market, except for very late shipment. The market continues firm in tone, the following being the official schedule of discounts for carload lots, Chicago, base, random length, mill shipment:

|  | Steel Pipe. |           | Guaranteed Wrought Iron. |           |
|--|-------------|-----------|--------------------------|-----------|
|  | Black.      | Galvd.    | Black.                   | Galvd.    |
| Per cent.                                  | Per cent.   | Per cent. | Per cent.                | Per cent. |
| ¼ to ¾ inch.....                           | 66.35       | 56.35     | 63.35                    | 53.35     |
| ¾ inch.....                                | 68.35       | 58.35     | 65.35                    | 55.35     |
| ¾ to 6 inches.....                         | 73.35       | 63.35     | 70.35                    | 60.35     |
| 7 to 12 inches.....                        | 67.35       | 57.35     | 64.35                    | 54.35     |
| Less than carloads, 12½ per cent. advance. |             |           |                          |           |

**Boiler Tubes.**—Larger orders have been placed with manufacturers, and the outlook is extremely satisfactory, with a firm and confident tone prevailing. The following official schedule of discounts for carload lots, Chicago, prevails:

|                          | Steel. | Iron. |
|--------------------------|--------|-------|
| 1 to 1½ inches.....      | 43.35  | 38.35 |
| 1½ to 2½ inches.....     | 53.85  | 35.85 |
| 2½ to 5 inches.....      | 60.85  | 45.85 |
| 6 inches and larger..... | 55.85  | 35.85 |

Less than carloads, 12½ per cent. advance.

There has been a good order demand for shipment from local stocks and the market has continued firm. The following are the discounts for shipment from local warehouse:

|                          | Steel. | Iron. |
|--------------------------|--------|-------|
| 1 to 1½ inches.....      | 40     | 35    |
| 1½ to 2½ inches.....     | 50     | 32½   |
| 2½ to 5 inches.....      | 57½    | 42½   |
| 6 inches and larger..... | 50     | ..    |

**Merchant Steel.**—One or two agricultural implement manufacturers have again partially covered requirements for the 1903-1904 season for disks and other shapes, but generally speaking the market is quiet. There has been a fair demand for Tool Steel, but less inquiry for Shafting, and prices of all kinds have been without essential change. The following are the prices current at Chicago for mill shipment: Smooth Finished Machinery Steel, 2.01½c. to 2.11½c.; Smooth Finished Tire, 1.96½c. to 2.11½c.; Open Hearth Spring Steel, 2.66½c. to 2.76½c.; Toe Calk, 2.31½c. to 2.46½c.; Sleigh Shoe, 1.86½c. to 1.96½c.; Cutter Shoe, 2.41½c. to 2.61½c. Ordinary grades of Crucible Tool Steel are quoted at 6c. to 8c. for mill shipment; Specials, 12c. upward. Cold Rolled Shafting in carload lots sells at 47 and in less than carload lots at 42 discount from list.

**Rails and Track Supplies.**—For the first time in many weeks the sale of Standard Rails has been insignificant, but with the mills practically sold ahead for the entire year this is of little significance to producers. There are several sales of Standard Rails pending, however, both of domestic and foreign sections, and the inquiry for Light Rails is still quite active, although less urgent for immediate delivery. A firm tone has continued to prevail, official quotation remaining at \$28 for Standard and \$27 for second quality, mill shipment, Light Rails ranging from \$35 to \$40, according to weight. Track Supplies have continued firm with a good inquiry for all kinds. The following are the prices current at Chicago for mill shipment: Splice or Angle Bars, 2c. to 2.25c.; Spikes, 2.10c. to 2.25c.; Track Bolts, 3½ to 3¾ inches and larger, with Square Nuts, 2.85c. to 3c.; with Hexagon Nuts, 3c. to 3.25c. From store, 10c. to 15c. over mill prices are asked and obtained.

**Old Material.**—There have been freer offerings, both from the country and from local sources, in some instances there being urgency to sell, which has resulted in further material decline in prices. Bar mills are still holding off, but there is a fair outlet through Open Hearth furnaces. The decline has been quite general, ranging from 50c. to \$1 a ton, taking in railroad Iron of various kinds and machine shop by-products. The following are the prices current per gross ton, Chicago:

|                                     |                    |
|-------------------------------------|--------------------|
| Old Iron Rails.....                 | \$23.50 to \$24.00 |
| Old Steel Rails, mixed lengths..... | 17.00 to 18.00     |
| Old Steel Rails, long lengths.....  | 22.00 to 22.50     |
| Heavy Relaying Rails.....           | 31.00 to 31.50     |
| Old Car Wheels.....                 | 22.50 to 23.00     |
| Heavy Melting Steel Scrap.....      | 17.00 to 17.50     |
| Mixed Steel.....                    | 15.00 to 15.50     |

The following quotations are per net ton:

|                                       |                    |
|---------------------------------------|--------------------|
| Iron Fish Plates.....                 | \$20.00 to \$20.50 |
| Iron Car Axles.....                   | 24.00 to 24.50     |
| Steel Car Axles.....                  | 23.00 to 23.50     |
| No. 1 Railroad Wrought.....           | 19.00 to 19.50     |
| No. 2 Railroad Wrought.....           | 17.00 to 17.50     |
| Shafting.....                         | 19.00 to 20.00     |
| No. 1 Dealers' Forge.....             | 16.00 to 16.25     |
| No. 1 Bushing and Wrought Pipe.....   | 14.00 to 14.25     |
| Iron Axle Turnings.....               | 14.00 to 14.50     |
| Soft Steel Axle Turnings.....         | 13.50 to 14.00     |
| Machine Shop Turnings.....            | 13.50 to 14.00     |
| Cast Borings.....                     | 9.00 to 9.25       |
| Mixed Borings, &c.....                | 10.50 to 11.50     |
| No. 1 Bolders, cut.....               | 14.00 to 14.50     |
| Heavy Cast Scrap.....                 | 16.50 to 17.00     |
| Stove Plate and Light Cast Scrap..... | 13.00 to 13.25     |
| Railroad Malleable.....               | 16.00 to 16.50     |
| Agricultural Malleable.....           | 15.00 to 15.25     |

**Metals.**—The buying movement of Copper in this market is still delayed and the tone of the market is easier, but there is no pressure to sell, and with the prospect of buyers entering in the market, the market remains steady. Casting Copper is held at 14½c. and Lake at 15c. in carload lots, Chicago. Pig Lead has remained quiet but firm, quotations continuing steady on the basis of 4.30c. in 50 to 100-ton lots and 4.32½c. in carload lots, Chicago. Spelter has remained firm and in good demand at 5.45c. in carload lots for Slabs, while Sheet Zinc has remained steady and sold in a jobbing way at 6.90c., Chicago. Old Metals have continued quiet, with Copper and Brass steady and Lead and Zinc strong, but without further change in prices. Heavy Cut Copper is held at 12½c., Red Brass at 12¼c., Copper Bottoms at 11c., Lead Pipe at 4c. and Zinc at 4.25c., spot.

**Coke.**—The market has been heavy and prices lower under freer offerings and only a moderate demand. Not only

new ovens but a number of old plants that were idle during the winter are coming in, increasing both the present and prospective supply, with ample railroad facilities for distribution to market. Among the more important sales during the week have been 3000 cars of Furnace Coke at \$3 at the ovens and 2000 tons of Standard Foundry Coke at \$3.75 at the ovens for delivery during the last half of the year. The following are the prices current: Furnace Coke, \$3 to \$3.50, and Foundry Coke, \$3.75 to \$4.25 at the ovens, freight, Chicago, \$2.65, and sales are being made on this basis, spot track, Chicago, according to quality.

The Chicago office of the Pennsylvania Steel Company, located in the Western Union Building, reports the closing of a contract for furnishing and erecting 650 tons of bridge material for the St. Louis Cut Off Branch of the Big Four Railroad. The company also sold to machinery manufacturers 14 additional large Blooms, 18 x 18, weighing from 8 to 10 tons each.

Hubbert & Hubbert, Steel and Iron factors, Chicago, have moved to 621 Roanoke Building, 145 La Salle street.

## Philadelphia.

FORREST BUILDING, May 19, 1903.

The Iron market has had a rather lively time in the newspapers, but the outside world know as little about it now as they did a month ago. The situation is not so very hard to understand either, but the dear public love excitement and mystery. The plain truth is that prices for Iron and Steel are weak, and look like going lower, and that is the sum and substance of the entire business. To begin with, Pig Iron is about 50c. lower than it was a week ago and \$1.50 to \$2 lower than it was on the first of the month. The situation is very peculiar, however, and in some respects is not entirely clear to even the very best men in the trade. For instance, it is only a week or ten days ago when Basic Iron was said to be sold up so close that there was none to be had for May and June shipment, yet when a few thousand tons were offered for resale there was absolutely no market for it. On the other hand, however, providing this lot was out of the way and Basic Iron was wanted, it would be equally hard to find any one who had it to offer. It may be inferred, therefore, that the Basic situation is so sensitive that a very slight change would affect prices either way, and immediately. Prices are hardly quotable at the present time, as there is not sufficient demand to establish a price; but sellers intimate that good buyers could be accommodated with Iron at about \$20, delivered, for No. 2 X Foundry, from which it may be assumed that a little better could be done on the right kind of an offer. The fact that Iron can be had without running after it is such a novel experience that buyers hardly know what to do about it, and until they can make up their minds sellers will have to wait. Meanwhile stocks are light and shipments about as large as they have ever been, so that there is no pressing necessity for immediate sales. Nevertheless, makers of Pig Iron are willing to enter liberal quantities on the basis of about \$20, and if buyers come forward with reasonably satisfactory bids there will be no difficulty in securing the Iron. The Finished Material end does not look very promising. There is a moderately good demand and order books are in fair condition, but the volume of new business is somewhat disappointing. The capacity for production has grown so enormously that what would have been three or four full months' employment a year ago would now be not more than two or three months' work, so that even with the same volume in hand there is a greater necessity for securing more if the *statu quo* is to be maintained. Prospects cannot be regarded as entirely favorable for the reasons named, but beyond that there is not as much work in sight as there was a year ago. The building of Steel cars has absorbed more Steel than any other interest during the past two or three years, but in view of the promptness with which the roads can furnish cars to shippers it is obvious that orders for new equipment will not be as urgent as they have been during the period named. It should also be noted that several prominent railroads have reduced time in some departments, and in others have given notice of their intention to postpone a portion of the contemplated new construction. These are not pleasing incidents, but in any candid consideration of the situation they ought not to be ignored. The most that can be hoped, therefore, is that present conditions may continue during the next two or three months, after which it will depend upon circumstances which are at present too uncertain for present consideration.

**Pig Iron.**—The market is too irregular and conditions too uncertain to permit of very exact quotations. There can be no doubt, however, that prices are lower than they were a week ago, and that buyers are waiting for still lower figures. Producers and sellers are disposed to meet the market on easy conditions, but it requires two sides to make a market, and in this case it is the buyers that are on strike, although they are asked to name their own terms. The situation is, therefore, one of suspense, and it will probably require two or three weeks time before the market finds where



it is at. Stocks of Pig Iron as shown by the last furnace report are astonishingly small, yet there seems to be plenty of Iron for almost any delivery that may be called for. A fair average quotation for No. 2 X Foundry would be about \$20, delivered; some ask a trifle more, some would take less, providing the order was for a quantity sufficient to be worth considering. Local Irons are relatively weaker than those from a distance, as a good deal of outside Iron was bought during the Coal strike, and this Iron is crowding local material temporarily. Furnaces are in good shape, however, as they have little or nothing on the banks, and back orders combined with the current demand enable them to maintain fairly steady prices, but there is little or nothing doing for extended deliveries, so that it is recognized that so far as prices are concerned they are still very uncertain. The ultimate outcome will depend on what may develop before midsummer, but if plenty of business could be had at around \$19.50 to \$20, sellers would doubtless accept the situation without demur. Foreign markets are weak, however, and a great deal of stuff has come forward recently, and at the present parity they might yet give us a considerable tonnage, if by so doing they could save their own markets. Quotations for city and nearby points delivered in sellers' yards are about as follows, but only small lots have been taken at the figures named:

|                           |                    |
|---------------------------|--------------------|
| No. 1 X Foundry.....      | \$21.00 to \$21.50 |
| No. 2 X Foundry.....      | 19.50 to 20.50     |
| No. 2 Plain.....          | 19.00 to 19.25     |
| Gray Forge.....           | 18.50 to 19.50     |
| Basic.....                | 19.00 to 19.25     |
| Middlesbrough, No. 3..... | 19.00 to 19.50     |

Cargo lots c.i.f.

|                            |                    |
|----------------------------|--------------------|
| Low Phosphorus, 0.005..... | \$20.85 to \$21.00 |
| Middlesbrough, No. 3.....  | 16.75 to 17.25     |

**Steel.**—There is a great deal of inquiry, but Steel for prompt shipment is hard to arrange for, and prices are relatively high. For deliveries during the last half of the year \$28 to \$28.50 can be done for German Steel, ex-ship, but domestic for prompt shipment would cost \$31 to \$32 in buyers' yards.

**Plates.**—There is nothing noteworthy in the Plate situation. The demand is moderately active, but there is no trouble in getting almost any delivery that may be required. Prices are steady, and for the present there is no probability of any change from present quotations, which are as follows for city or nearby deliveries: Small lots, 1.95c. to 2c.; carload lots, ¼-inch and thicker, 1.75c. to 1.80c.; Universals, 1.80c.; Flange, 2c.; Marine, 2.10c. to 2.15c.; Fire Box, 2.20c. to 2.25c.

**Structural Material.**—There is only a fair demand, and prospects are not such as to warrant hopes of any great activity, although it is thought that the mills will have full employment. Last year they had to compete with foreign material, but at present prices there is no margin for importers, so that the entire demand will no doubt go to American mills. Prices unchanged, as follows: Beams, Angles or Channels, ordinary sizes, 1.73½c. to 1.78½c. for carload lots, with the usual addition for smaller quantities.

**Bars.**—Mills are fairly busy on orders taken since the practical withdrawal of pool prices. Manufacturers are now at liberty to quote their own prices, which are usually 1.80c. at mill for Refined Bars in carload lots and 1.75c. to 1.80c. for Steel Bars. The present activity is due to the placing of orders by parties who felt that prices were too high, but with the rebate of \$1 to \$1.50 a ton for last month's prices there was no reason for further delay.

**Sheets.**—There is a continued good demand for Sheets, some of the mills having a larger tonnage on their books than they ever had before, but it is difficult to maintain prices, although about 3c. is quoted on No. 28, others in proportion.

**Old Material.**—The market is quiet, but at the following bid prices plenty of business could be had. Holders, however, in most cases hold out for more money. Bids and offers are about as follows for deliveries in buyers' yards:

|  |                    |
|--|--------------------|
| Old Steel Rails.....                   | \$21.50 to \$22.00 |
| Heavy Steel Scrap.....                 | 20.50 to 21.25     |
| Low Phosphorus Scrap.....              | 28.00 to 29.00     |
| Old Steel Axles.....                   | 26.00 to 27.00     |
| Old Iron Rails.....                    | 24.50 to 25.00     |
| Old Iron Axles.....                    | 29.00 to 30.00     |
| Old Car Wheels.....                    | 24.00 to 25.00     |
| Choice Scrap, R. R. No. 1 Wrought..... | 22.50 to 23.50     |
| Country Scrap.....                     | 19.50 to 20.00     |
| Machinery Scrap.....                   | 19.50 to 20.00     |
| No. 2 Light Scrap.....                 | 18.00 to 19.00     |
| No. 2 Light (Ordinary).....            | 14.00 to 15.00     |
| Wrought Turnings.....                  | 15.50 to 16.00     |
| Wrought Turnings, Choice Heavy.....    | 17.00 to 17.50     |
| Cast Borings.....                      | 11.00 to 11.50     |
| Stove Plate.....                       | 15.00 to 15.50     |

The steel car wheel rolling machine which has been built by the Bethlehem Steel Company of South Bethlehem, Pa., for C. T. Schoen and associates of Pittsburgh, has been thoroughly tested and is soon to be dismantled to be shipped to the new plant. A number of additional machines are to be built.

## Cleveland.

CLEVELAND, OHIO, May 19, 1903.

**Iron Ore.**—The Iron Ore trade of the lakes is beginning to assume the regular midseason activity. Cargoes that have been withheld hitherto for various reasons and on certain pretexts are coming forward with their wonted freedom. The conditions for the year are now pretty well understood. The natural tendency is for the state of the market to remain as it is, with boats getting fair dispatch and with the demand for and the supply of tonnage about at an equilibrium. The rates have remained unchanged at the old figures, both on wild and contract cargoes, of 85c. from Duluth, 75c. from Marquette and 65c. from Escanaba. The dispatch at the unloading ports might have been improved, the car supply being blamed for the delays. Nothing is being heard of as to sales, but the quotation of prices has not been altered, being based on \$4.50 for Bessemer Old Range and \$4 for Bessemer Mesaba.

**Pig Iron.**—The present situation in foundry Pig Iron does not show much of a deviation from the conditions of the trade during the past few weeks. The present demand is as lively as the supply will permit and there has been some fear of an invasion of the foreign furnaces into this territory to do a portion of the business against which the domestic furnaces have been vigorously contending. The present supply is hardly adequate to consumers' needs, but they are making shift with what they are able to obtain. Prices have not changed, being based on \$22, f.o.b. Southern Ohio furnace, for the remainder of May and June delivery. The Valley furnaces do not participate in this, being out of material for present delivery. The transactions for second half have also been held up and nothing of any nature has been reported lately. The uncertainty of prices is the principal obstruction in the road of business. The reported changes in the prices in the Eastern market had no effect upon this market. The furnacemen here are merely waiting developments and are not disposed to sacrifice their material. Consumption here, regardless of the shipments from abroad on old contracts and the new capacity, has been in excess of production and stocks are being depleted. Furnacemen believe that they will have enough material to meet second half demands and are firm in their prices. Quotations do not vary greatly, being understood to be purely nominal at \$21 to \$21.50, Valley furnace, for second half delivery. The Bessemer and Basic furnaces are entirely off of the market for the time being. The Basic producers have in most instances sold material for third quarter delivery at the old prices, giving them orders that will keep them employed for about three months. They are perfectly willing with this situation in view to wait the developments of the interim. The present demand for Basic is in excess of the supply and the market is strong. In the Bessemer trade the delay arises from the inactivity on the part of the Steel Corporation and there is no certainty as to when the big company will act. No inquiries of any importance have been made during the past week. The prices of both Bessemer and Basic are quoted on the old basis, regardless of reports from other territories. These prices are: Basic, \$21.50 to \$22, Valley furnace, for first half and \$20, Valley furnace, for second half; Bessemer, \$21.50 to \$22, Valley furnace, for first half and \$20.50 to \$21 second half. Both prices are purely nominal. Production has continued at a lively rate, the supply of raw material being entirely satisfactory and most of the furnaces being able to collect stocks of Coke for future use.

**Finished Iron and Steel.**—The market generally has been easier. Orders of all sorts of material have been good, but the specifications on old contracts have eased up and more mill capacity has been placed on the open market. In the Bar trade there has been hardly a change of conditions, with the possible exception that the Bar Iron situation is getting a little weak, and the outlook is not quite so good as it was. In Bar Steel the orders this week have been satisfactory and about all of the smaller consumers have now covered for 1903-4. The big agricultural implement works have not covered, the Deering strike deterring all of them. The little tonnage has been quite satisfactory as far as it went. It is now considered as only a matter of time until the big buyers have covered. Bar Iron prices have eased, and while the larger mills are still quoting 1.80c. to 1.85c., Youngstown, the report is abroad that a small block of tonnage has been taken at 1.75c. at the mill. The talk in this trade is a bit bearish. In Structural the harassment of labor difficulties has been strongly felt and the market is not as strong as it might be. The buying of the smaller concerns which are not hurt by the labor difficulties has been steady and satisfying. On big business, however, new contracts are lacking and specifications on old contracts are slow. The smaller mills are competing directly with the larger ones for business. Jobbers are getting something to do, but their prices are weakening. Mill sales are on the old basis of 1.60c., Pittsburgh, while stock sales range from 2.15c. to 2.25c. The Plate market has been considerably easier this week, with the larger concerns offering to take a little tonnage at the old association prices. This is cutting into the trade of the smaller mills, but has not wiped out

their premiums so far. The lack of specifications threw the big tonnage on the open market. The prices range from 1.60c., Pittsburgh, to 2c., Cleveland. Sheets show a complete reversal of conditions from the first of the year. They are now strong, while the heavy Steel trade is inclined to be weak, whereas three months ago the converse was true. The market in Sheets has been very steady and the buying continues to show the buoyancy which has been manifest for five weeks. Prices have not changed, being still based on 3.10c. to 3.25c. for No. 27 Black Sheets out of stock and 2.85c. to 2.95c. for the same gauge at the mill. The Rail trade has been active, but mills are in no position to accept any orders of any consequence. The demand for Light Rails has been good and the supply has been adequate. Prices have not changed from \$28, Pittsburgh, for Standard Rails and \$36, Pittsburgh, for Light Rails.

**Old Material.**—The Scrap market is very dull, with no sales of importance being made. The supply is considerably in excess of the requirements and prices are inclined downward, but without a break having been made. The quotations are unchanged as follows: No. 1 Wrought, \$19.50, net; Cast Borings, \$12, gross; Car Wheels, \$22.50, gross; Heavy Steel, \$21, gross; Iron Rails, \$25.50, gross; Iron Axles, \$27.50, net; Wrought Turnings, \$14.50, net; Old Steel Rails, \$21, gross.

### St. Louis.

CHEMICAL BUILDING, May 20, 1903.—(By Telegraph.)

**Pig Iron.**—Pig Iron preserves a very quiet tendency and the market seems quite bare of inquiry and sales for forward delivery. The associated furnaces in the South continue to quote in this market No. 2 Foundry at \$17.50, Birmingham, but outside furnaces shade this price quite materially. While the old and leading Southern interests are well supplied with orders for the next 60 to 90 days, we are informed that some of the more recent companies in the field are piling Iron to some extent. Sales agents here, it is said, are being continually jogged up by their customers to hurry forward shipments of Iron, and while there is a hesitancy to contract at this time for future requirements, there seems to be little inclination to curtail on old orders on account of the declining prices. We quote, f.o.b. St. Louis, as follows:

|  |                    |
|--|--------------------|
| Southern, No. 1 Foundry.....           | \$20.25 to \$21.75 |
| Southern, No. 2 Foundry.....           | 19.75 to 21.25     |
| Southern, No. 3 Foundry.....           | 19.25 to 20.25     |
| Southern, No. 4 Foundry.....           | 18.50 to 20.25     |
| No. 1 Soft.....                        | 20.25 to 21.75     |
| No. 2 Soft.....                        | 19.50 to 21.25     |
| Gray Forge.....                        | 18.25 to 19.75     |
| Southern Car Wheel.....                | 25.50 to 26.00     |
| Malleable Bessemer.....                | 22.00 to 22.50     |
| Ohio Silvery, 8 per cent. Silicon..... | 29.00 to 30.00     |
| Ohio Strong Softeners, No. 1.....      | 23.00 to 23.25     |
| Ohio Strong Softeners, No. 2.....      | 22.50 to 22.75     |

**Bars.**—There is perhaps a lighter volume of call upon the mills at this time for Iron and Steel Bars, but from the jobbers' standpoint trade continues at a very fair rate. We quote from the mills: Iron Bars at 1.85c. to 1.90c., Steel at 1.82c. to 1.90c., half extras. Jobbers quote 2.15c. for both Iron and Steel in round lots, with an advance of 10c. for small lots from store.

**Rails and Track Supplies.**—The general condition of trade has continued the past week on about the same basis as last report. We quote as follows: Splice Bars at 2.05c. to 2.25c.; Bolts, with Hexagon Nuts, 3.05c. to 3.25c.; with Square Nuts, 2.90c. to 3.05c.; Spikes, 2.25c. to 2.30c. Jobbers' prices are generally about 10c. to 15c. higher than the above quotations.

**Angles and Channels.**—The jobbing trade report a fairly well sustained trade for Angles and Channels, and in the matter of prices no changes are to be noted. For material of this class in lots from store 2.25c. to 2.40c. is the prevailing quotation.

**Pig Lead.**—Conditions in the Lead market continue rather unsettled, due largely to the persistent talk of the merger. Buyers of prominence are not in the market at this time and prices continue to show a disposition to decline. Missouri brands are quotable at 4.15c.

**Spelter.**—Offerings of Spelter for quick delivery are very light and quotations are therefore variable for this class of material. Offerings for future delivery are on a basis of 5.45c. to 5.50c.

### Birmingham.

BIRMINGHAM, ALA., May 18, 1903.

It is an almost impossible thing to write satisfactorily of the Iron market. Transactions are limited in volume, while inquiries are very fair. It cannot be said that business is satisfactory. We have one set of interests working to one end, and another set, if not opposing outright, yet in a quasi way resisting the fruition of object. As far as can be attained the effort of the association furnaces to keep prices at a uniform standard has been tried. But it has not been a success. Even in its own ranks there are reports of concessions, and for desirable business that is being offered there is always some interest on hand to shade prices sufficient to secure it. But there must be considered the fact

that the leading and most influential interests are on the side of the maintenance of published values, and as far as can be ascertained they are adhering to them. But don't forget the fact that there are enough free lances in the market to materially disturb values and affect quotations. While the aggregate of the sales is not materially great, the fact leaks out that lower values have been secured, and that cuts the edge of appetite and postpones the satisfying of wants. Nearly all the business secured has been for nearby delivery. For the last half of the year it has been small, and one can say with truth it has been disappointingly small. Of late though it can be said that one large order, covering 10,000 tons, and running as to delivery into the third quarter, has been placed at, as reported, associated prices. It is further reported that it was for Eastern account, which would insure minimum values. The honest truth is that the difficulty in obtaining real facts is so great that after you have obtained them you are in doubt as to their verity. What you hear at one source is positively disputed by another source, and after you have gone "the rounds" and go to thresh the wheat from the straw you are in doubt as to "which is which." But this much can be relied upon: there were sales made upon the basis of \$17.50 for No. 2 Foundry for prompt and nearby delivery and similar sales on the basis of \$17 for No. 2 Foundry. Then there are reports of sales all the way down to \$15.50, but efforts to locate and confirm them have proved to be unavailing. Yet your correspondent has no reason to doubt them, as he has been tendered open quotations on these bases. It is true that the quantity offered is slight—not sufficient to satisfy even a small demand. But in the present condition of the market the possibility of lower values which conceded prices indicate is the ghost that influences buyers to stay at home.

There have been several buying interests of late who have notified their correspondents here that they would not be in the market before July, when they anticipated lower values would prevail. But it is a well-known fact that several large interests are butting every week against the wall of prices, trying to effect a lodgment. Succinctly stated, as much can be said on one side as the other and a fair review of actual conditions is all that is aimed at. There is one important requirement on the market which in all probability will be concluded before this is printed. As competition for it is keen the inference is it will have special consideration, with conceded prices. There is one thing that cuts an interest in the market and that is the cancellation of orders given when soaring prices tempted orders. The necessity for protection having ceased, the desire now is to uplift the bars and "call things square." "A trade is a trade" is one of the things many in the Iron trade have yet to learn.

### Pittsburgh.

(By Telegraph.)

**Pig Iron.**—Recently there have been many pessimistic reports in the daily press and from other sources as to the condition of the Pig Iron market, which are not founded on facts. Nothing shows the strong condition of the Pig Iron market more than the fact that leading consumers who are regular buyers of Pig Iron in the open market, such as the Cambria Steel Company, Carnegie Steel Company and others, are urging prompt shipments, and are requesting furnaces to anticipate deliveries as much as possible. This shows that while a tremendous amount of Pig Iron is being made, it is going into actual consumption. In spite of an output of more than a million and a half tons in April, unsold stocks on May 1 were considerably less than on April 1. It is a fact that none of the large Pig Iron consumers have bought any Iron for third or fourth quarter deliveries, and reliable reports are that negotiations are on at the present time for heavy purchases of Bessemer Iron by the United States Steel Corporation, Cambria Steel Company, Wheeling Steel & Iron Company, and other leading consumers. Prices of Bessemer and Basic Iron are firm, and it is not thought that on a large block of Bessemer Iron a lower price than \$19, at Valley furnace, would be made. It is just as much to the interest of the larger consumers of Iron to sustain the market as it is to the interest of the furnaces making the Iron. On small lots of Bessemer or Basic Iron for shipment in May or June from \$19.25 to \$19.50, at Valley furnaces, has been paid. There have been sales of probably 10,000 tons or more at these prices. The market on Forge Iron is somewhat quiet, Northern brands being held at about \$19.75 to \$20, Pittsburgh. Southern Forge is being offered in the Pittsburgh district at prices somewhat under \$19.85, which is the official quotation of the Southern furnaces, but which is not being held. There is some inquiry for Foundry Iron in small lots, but the large consumers are either covered or else are holding off waiting for lower prices. Northern brands of No. 2 Foundry are \$21 to \$21.50, Pittsburgh.

**Steel.**—The Steel market continues very strong and there is a fair amount of inquiry. Bessemer Billets are held at \$30 to \$30.50, and Open Hearth, \$30.50 to \$31, f.o.b. Pittsburgh. Most of the leading consumers of Steel are covered by long time sliding scale contracts, based on the



price of Pig Iron, and under the terms of these contracts Bessemer and Open Hearth Billets for April were very close to \$30, Pittsburgh.

**Old Material.**—There is a fair amount of inquiry for Iron and Steel Scrap, and prices are fairly steady. We note a sale of about 7000 tons Heavy Melting stock at \$21, Pittsburgh.

(By Mail.)

There is nothing of special interest to note in the Iron trade this week, prices of Pig Iron having held fairly stationary for the past ten days, and it is believed that the bottom of the market has pretty nearly been reached. In Bessemer Iron prices remain at \$19 at furnace, but a few sales have been made at a slightly lower price f.o.b. at furnace outside the Youngstown and Pittsburgh districts. The market on Forge and Foundry Iron is comparatively quiet, buyers holding off in the belief that prices may settle to a still lower level. The Steel market continues active and with this material somewhat scarce high prices are ruling. Bessemer Billets for prompt shipment continue to bring from \$30.50 to \$31, maker's mill. In Finished Iron and Steel the market has been fairly active and prices steady. It is the sentiment in the Iron trade that the balance of this month and June may remain somewhat quiet, but a good buying movement is expected in July. A good many contracts for material expire in June and consumers will have to come into the market at that time to replenish supplies. The Coke market continues somewhat unsettled, there being a surplus of Coke, and some comparatively low prices have been made on this material for prompt shipment. The Coke makers, realizing that more Coke is being made than the trade will take, have taken steps to restrict output by blowing out quite a number of ovens in the Connellsville region. The boilermakers are still out on strike for higher wages and a shortening of hours, but it is believed this trouble will be settled before long. As yet no agreement has been reached between the machinists and employers in the Pittsburgh district, but as their scale does not expire for more than a month yet there is strong hope that an agreement will be reached before the present scale expires.

**Steel Rails.**—A very light tonnage is being placed, made up altogether of small lots. The Rail mills are pretty well booked for the balance of this year. We quote at \$28, at mill, for Standard Sections in 500 ton lots and over.

**Plates.**—Conditions in the Plate trade remain about the same as noted in this report last week. Demand continues fairly heavy and the mills have large tonnage on their books, which will keep them running to full capacity for some months to come. There is some difficulty in getting prompt deliveries of Plates in the Pittsburgh district, but the Eastern mills, we are advised, are making prompt shipments, in some cases a slight premium being paid for early delivery. While consumption of Plates is large, it is also recognized that capacity has been very much increased in the past year and will still further be increased by the building of a large new Plate mill at Homestead, which is now under way. With this still further increase in capacity, the mills will no doubt be able to take care of demand and make prompt shipments. There is no change in prices, which are as follows: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price up to 3c. Plates more than 100 inches wide, 5c. extra per 100 lbs. Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

**Iron and Steel Bars.**—The market on Iron Bars has been disturbed to some extent by the withdrawal of one of the Central Pennsylvania mills from the Eastern Bar Iron Association. It is stated that some of the Eastern mills are naming comparatively low prices on Iron Bars for delivery in the Pittsburgh district. Demand for Steel Bars continues fair and specifications on old contracts are coming in at a satisfactory rate. We quote Iron Bars at 1.85c., Pittsburgh, but it is not unlikely this price is being shaded for desirable orders. Half extras are charged as per National card. We quote Steel Bars at 1.60c., at mill. All specifications for less than 2000 lbs. of a size subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10c. per lb. extra. Quantities less than 1000 lbs., 0.30c. per lb. extra, the total weight of a size to determine the extra regardless of length.

**Rods.**—The Rod market is fairly active and as supply is very limited prices remain high and are firm. We quote Bessemer Rods at \$37 to \$37.50 and Open Hearth \$38 to \$39, f.o.b. Pittsburgh.

**Muck Bar.**—The market continues very quiet and practically no bar is moving. We quote domestic makes at \$35, Pittsburgh, but, as noted last week, this price would probably be shaded on a firm offer.

**Structural Material.**—Contracts placed during the week included the Ore and Coke bins for the Buffalo & Susque-

hanna Iron Company, at Buffalo, about 1000 tons, and a large building for the Pennsylvania Railroad at Altoona, Pa., about 1400 tons. A great deal of work is in sight, but Structural concerns advise us that it is very slow coming out. It is said there is some difficulty in financing large buildings, owing to so much capital being used in other channels. However, the Structural mills and erecting concerns have a great deal of work on hand, and this year promises to be fully up to 1902 in every way. Deliveries of material by the mills are being made fairly promptly, there being very little delay. Premiums in prices for prompt shipments have about entirely disappeared. We quote as follows: Beams and Channels up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c. to 1.70c.

**Sheets.**—Demand for Sheets this month has been somewhat disappointing, not being as large as in March and the early part of April. The leading interest is understood to be well booked up for some time to come and is making reasonably prompt deliveries. The outside mills are having more or less trouble to get Billets and Sheet Bars, and this is no doubt having a strong influence in sustaining the market. Prices are firm, but without special change. We quote Black Sheets as follows: Nos. 22 and 24, Box Annealed, one pass through cold rolls, 2.45c.; No. 26, 2.55c.; No. 27, 2.65c. to 2.75c., and No. 28, 2.75c. to 2.85c. We quote Galvanized Sheets at 75 and 10 off in carload and larger lots for desirable orders, but note that some mills are quoting at 75 and 7½ off. In small lots Galvanized Sheets are held at 75 and 5 off.

**Hoops and Bands.**—A fair amount of tonnage is being placed in Hoops and Bands, but the mills could take care of a good deal more business if it was to be had. The season in Cotton Ties is over and there is nothing doing in these. We quote Cotton Ties, 88c. in 5000-bundle lots and over, and 91c. for less quantities. Steel Hoops are 1.90c. on 200-ton lots and over, and 2c. in less quantities. Bessemer Bands are 1.60c. up to No. 12 gauge, and Open Hearth, 1.70c., extras as per Steel card. These prices are f.o.b. maker's mill.

**Merchant Steel.**—Some fair sized contracts are being placed by implement makers for 1903-04 delivery. Demand for Bars from this class of trade is much lighter than last year. Tool Steel is in good request, but Shafting is somewhat quiet. Prices are as follows: Tire Steel, 1.80c. to 1.90c.; Open Hearth Steel, ordinary grades, 1.70c. to 1.80c.; Open Hearth Spring, 2.25c. to 2.35c.; Cant Hook Steel, 2.75c. to 3c.; Plow Slabs, Bessemer, 2.50c.; Plow Slabs, Open Hearth, 2.75c. to 2.85c.; Tool Steel, ordinary grades, 6½c. and upward; Cold Rolled Shafting, 42 per cent. off in less than carloads, and 47 per cent. in carloads, delivered in base territory.

**Iron and Steel Skelp.**—The market is very firm and we quote Grooved Iron and Steel Skelp at 2c. to 2.05c., and Sheared at 2.10c., f.o.b. Pittsburgh.

**Pipes and Tubes.**—The condition of the Pipe market remains the same as noted in our last report. Demand continues heavy, being much larger than at this time last year, and the leading mills are well filled up for several months. On some sizes of Pipe slight premiums are being paid for prompt deliveries. In carloads discounts to consumers are as follows:

|                                | Steel.    |           | Wrought Iron. |           |
|--------------------------------|-----------|-----------|---------------|-----------|
|                                | Black.    | Galv.     | Black.        | Galv.     |
|                                | Per cent. | Per cent. | Per cent.     | Per cent. |
| 1/8, 1/4 and 3/8 inch.....     | 68        | 58        | 65            | 55        |
| 1/2 inch.....                  | 70        | 60        | 67            | 57        |
| 3/4 to 6 inches.....           | 75        | 65        | 72            | 62        |
| 7 to 12 inches.....            | 69        | 59        | 66            | 56        |
| Plugged and Reamed:            |           |           |               |           |
| 1 to 4 inches.....             | 73        | 63        | 70            | 60        |
| Cut 3 to 6 feet:               |           |           |               |           |
| 1/8, 1/4 and 3/8 inch.....     | 63        | 52        | 60            | 49        |
| 1/2 inch.....                  | 65        | 54        | 62            | 51        |
| 3/4 to 6 inches.....           | 71        | 60        | 68            | 57        |
| 7 to 12 inches.....            | 65        | 53        | 61            | 50        |
| Cut 6 feet and longer:         |           |           |               |           |
| 1/8, 1/4 and 3/8 inch.....     | 64        | 53        | 61            | 50        |
| 1/2 inch.....                  | 66        | 55        | 63            | 52        |
| 3/4 to 6 inches.....           | 72        | 61        | 69            | 58        |
| 7 to 12 inches.....            | 66        | 54        | 62            | 51        |
| Extra Strong Plain End:        |           |           |               |           |
| 1/4 to 8 inches.....           | 67        | 57        | 63            | 53        |
| Threads only.....              | 66        | 56        | 62            | 52        |
| Threads and Couplings.....     | 65        | 55        | 61            | 51        |
| Double Extra Strong Plain End: |           |           |               |           |
| 1/8 to 8 inches.....           | 59        | 49        | 55            | 45        |
| Threads only.....              | 58        | 48        | 54            | 44        |
| Threads and Couplings.....     | 57        | 47        | 53            | 43        |

NOTE.—Orders for less than carload will be charged at 12½ per cent. advance. Extra and Double Extra Strong Cut Lengths, lower random discounts by 10 per cent. net for 6 feet and longer, and 15 per cent. net for 3 to 6 feet. We may note, however, that on Iron Pipe some of the outside mills are naming slightly lower discounts.

**Coke.**—In order to cut down output of Coke, which is much too large for current demand, the H. C. Frick Coke Company and several of the smaller concerns have blown out a number of ovens in the Connellsville region. The supply of cars is good and Coke is being moved promptly. Some low prices are being made on Main Line Coke, and

this is influencing to more or less extent prices on strictly Connellsville Coke. Blast furnace operators continue to hold off placing contracts for Furnace Coke for last six months, believing that the market will settle down to lower figures. Strictly Connellsville Foundry Coke for shipment over last six months is quoted at \$4.50 to \$5 a ton at oven. Main Line Coke can be had at much lower prices.

### Cincinnati.

FIFTH AND MAIN STS., May 20, 1903.—(By Telegraph.)

Within the past week the Pig Iron market has changed but very little and that little in the direction in which the progress or reaction has been going on for the last month. We think the past few days there has been quite an increase in the volume of inquiry and from this some authorities are figuring that the basis of selling is getting somewhere close to buyers' views in regard to value. There has been some selling of Southern Iron on the general basis of \$15.50 for No. 2 Foundry, Birmingham basis. Several sales of 500 tons each are quoted of No. 3 Southern Foundry on the basis of \$15, Birmingham. A few of the Southern furnaces are becoming a little restless under an increasing stock of Gray Forge and kindred grades, and this is being offered in quantities up to 1500 tons as low as \$14.70, Birmingham, without producing anything in the way of sales. It has been stated, and the furnace named, the locality of the sale named and other accompanying facts given, that members of the association have sold Iron for prompt delivery at Indiana points on the basis of \$16.50, Birmingham. The majority of the association furnaces, however, are holding tenaciously to the agreed price of \$17.50, with the confession, however, that they are selling no Iron, which, under the circumstances, is not a remarkable state of affairs. The immediate future is just as hard to predict as it was a week ago, and while the tendency is toward lower prices, the point at which buyers will take a hand is still the undetermined and anxiously looked for place in the proposition. Freight rates from the Hanging Rock district, \$1.15, and from Birmingham to Ohio River points, \$3.25. We quote, f.o.b. Cincinnati, for delivery throughout the year, as follows:

|                                |                    |
|--------------------------------|--------------------|
| Southern Coke, No. 1.....      | \$19.25 to \$21.25 |
| Southern Coke, No. 2.....      | 18.75 to 20.75     |
| Southern Coke, No. 3.....      | 18.25 to 20.25     |
| Southern Coke, No. 4.....      | 17.25 to 19.75     |
| Southern Coke, No. 1 Soft..... | 19.25 to 21.25     |
| Southern Coke, No. 2 Soft..... | 18.75 to 20.75     |
| Southern Coke, Gray Forge..... | 16.50 to 19.50     |
| Southern Coke, Mottled.....    | 16.50 to 19.50     |
| Ohio Silvery, No. 1.....       | 26.15 to 27.15     |
| Lake Superior Coke, No. 1..... | 22.15 to 23.15     |
| Lake Superior Coke, No. 2..... | 21.15 to 22.15     |
| Lake Superior Coke, No. 3..... | 20.15 to 21.15     |

#### Car Wheel and Malleable Irons.

|                                       |                    |
|---------------------------------------|--------------------|
| Standard Southern Car Wheel.....      | \$28.25 to \$29.25 |
| Lake Superior Car Wheel and Malleable | 27.50 to 28.50     |

**Plates and Bars.**—We quote, f.o.b. Cincinnati, as follows: Iron Bars in carload lots, 1.92c., with half extras; same, in small lots, 2.20c., with full extras; Steel Bars, carload lots, 1.73c., with half extras; same, in small lots, 2.20c., with full extras; Plates,  $\frac{1}{4}$ -inch, in carload lots, are still nominally 1.70c.; 3-16 inch, 1.80c.; Beams and Channels, 1.70c., base.

**Old Material.**—The market is quiet and somewhat lower. We quote dealers' buying prices, f.o.b. Cincinnati, as follows: No. 1 Wrought Railroad Scrap, \$17 per net ton; Iron Rails, \$20.50 per gross ton; Long Steel Rails, \$20 per gross ton; same, short, \$19 per gross ton; Iron Axles, \$23 per net ton; Car Wheels, \$24 per gross ton; Low Phosphorus Steel, \$24 per gross ton; Heavy Melting Steel, \$19 per gross ton.

**Schwab Manual Training School.**—The Schwab Manual Training School, at Homestead, Pa., funds for the building of which were supplied by Charles M. Schwab, president of the United States Steel Corporation, was dedicated on Saturday, May 16. C. M. Schwab, together with other officials of the United States Steel Corporation and Carnegie Steel Company, was present at the exercises. The building has been under erection for about a year, and is complete in every detail. Mr. Schwab has promised some additional gifts to this institution in the matter of furnishment, and has also agreed to give the three boys making the best averages in the Schwab Manual Training School the opportunity to obtain complete courses in the best school of technology in the United States.

The American Sheet Iron Company of Phillipsburg, N. J., announce that hereafter all sales will be made from the Phillipsburg office, the selling agency with L. & K. Wister & Co. of Philadelphia having been withdrawn.

### The Southwark Slabbing Mill Engines for Cambria Steel Company.

The new 34-inch slabbing mill engines built by the Southwark Foundry & Machine Company of Philadelphia, Pa., for the Cambria Steel Company of Johnstown, Pa., drive two vertical and two horizontal rolls. They are notable as being the only compound condensing reversing engines running in this country, and have fully met the expectations of their builders in regard to economy and convenience of manipulation. They consist of a pair of horizontal tandem compound condensing reversing engines, with high pressure cylinders 38 inches in diameter, low pressure cylinders 63 inches in diameter, and are 60-inch stroke. They were designed to work under an initial steam pressure of 175 pounds noncondensing, or 150 pounds condensing, and run at a speed of 80 revolutions per minute. The spur gear has a cast iron center with cast steel rim, having teeth machine cut, and is carried upon a steel shaft, while the pinion is a steel casting with cut teeth, made in one piece. The gears are 106 and 54 inches in diameter respectively, with 40-inch face and teeth 9 inches pitch.

The low pressure cylinder is placed next the bed, with the high pressure cylinder tandem, and the engine has intermediate crossheads, with heavy guides between the cylinders, and a tail rod extending through the rear end of the high pressure cylinder. Both the high and low pressure cylinders are supported upon a substantial base plate. The two bed plates are of box pattern and of very heavy construction. They are each made in two pieces, securely held together with massive through bolts and shrunk links.

The cylinders all have double ported balanced slide valves of an improved design, and the low pressure cylinders are provided with removable liners. The valve gear and reversing links are carried upon auxiliary shafts driven by drag cranks from the main crank pins. The eccentric straps are of cast steel babitted. The reversing gear is operated from a pulpit at the mill some distance from the engine. All parts of the engine are readily reached by platforms with stairs, and the gears are covered with hinged shields, easily turned back for examination and lubrication.

The engine driving the vertical rolls is a double direct connected horizontal high pressure condensing reversing engine, with 26 x 30 inch cylinders. It is designed to work under the same high steam pressure as the larger engine, and runs at 270 revolutions per minute, a very high piston speed even for a rolling mill engine. The engine has two forked beds, whose nose rests upon and is keyed to the front end of bed plates of the compound engine. The shaft has center cranks forged in one piece with it and carries a barring wheel in the center. The condenser is one of the well-known Weiss counter current design, also built by the Southwark Foundry & Machine Company.

**Maryland Records.**—The Maryland Steel Company of Sparrow's Point, Md., beat all their previous records during the month of April, 1903. The blast furnaces produced 30,615 gross tons of pig iron. There were produced 45,191 tons of ingots and 39,183 tons of finished steel rails.

**Heavy Shipment of Sheets.**—On Monday, May 18, there was shipped from the Vandergrift Works of the American Sheet Steel Company, at Vandergrift, Pa., 1237 net tons of black and galvanized sheets. This is a record breaking shipment, having never before seen equaled. The Vandergrift Unit, embracing sheet mills of the American Sheet Steel Company at Vandergrift, Hyde Park, Leechburg, Saltsburg and Apollo is under the charge of Eugene W. Pargny, with headquarters in Vandergrift Building, Pittsburgh.

The recent issue of \$1,000,000 additional stock by La Belle Iron Works, Steubenville, Ohio, is to be used in paying for recent large improvements made by this concern. The latest addition started is a second blast furnace for which contracts have been let. This stack will be a duplicate of No. 1, which was blown in recently.



## The New York Machinery Market.

NEW YORK, May 20, 1903.

While considerable work is still held in abeyance owing to the unsettled condition of the labor situation, a good amount of large work which has been held back for a short time on this account has been released. The general business of the week was considerably better than many machinery merchants expected and little complaint is heard regarding the amount of inquiry at hand.

The extensive railroad propositions which have been pending for several weeks are still commanding considerable attention in the machine tool trade. Several new ones have come up during the last week and there are indications of a large amount of business coming from these sources in the near future. One of the largest lists coming to the attention of the trade during the week is that of the Pennsylvania Railroad, issued some time ago in connection with the new shops at Wilmington, Del. While many bids have been submitted on this work the matter was held up and has just been released again. In its present status this proposition is not as heavy as it was originally, owing to the curtailment of about 40 per cent. of the appropriation allowed by the company for this project. The new buildings are nearly completed and it is thought in the trade that purchases will be made just as soon as the bids are all in and tabulated.

It will be recalled that several weeks ago the Pennsylvania Railroad issued specifications for a long list of tools to be installed in their shops west of Pittsburgh. This matter, we understand, is still held up awaiting the proper appropriation.

The Central of Georgia Railway have just issued a list of machinery which we understand is to be installed in new shops. The list includes smaller and medium sized tools and is being sent out by R. L. Baugh, purchasing agent, Savannah, Ga.

The Chesapeake & Ohio Railway intend purchasing a large equipment for new shops to be built at Clifton Forge, Va. W. F. La Bonta, the purchasing agent, was in this city several days ago looking into machinery matters preparatory to his decision.

W. Garstang, superintendent of motive power of the Cleveland, Cincinnati, Chicago & St. Louis Railway of Indianapolis, Ind., or the Big Four, as it is usually termed, was also in New York within the last week. It is reported in the trade that he is also here for the purpose of looking into machinery matters preparatory to extensive purchases.

The Erie is purchasing a considerable quantity of machinery piecemeal. Whether or not this policy is to be pursued in place of issuing a list of specifications is not generally known. The orders which are now being placed are for all kinds of machine shop equipment and are being very well scattered among the principal machinery houses here.

We are informed that the Louisville & Nashville have not purchased any of the equipment as yet for their new shops at Louisville, but have sent out revised specifications asking for July delivery. T. H. Curtis, mechanical engineer, who is located in the Louisville offices, has the matter in charge.

The Baltimore & Ohio Railroad have placed additional orders against the large list which they issued a short time ago. We understand that practically all of this equipment has now been contracted for.

To the list of railroads in need of new equipment can be added the New York, Chicago & St. Louis Railway Company, who, we understand, have not as yet purchased the machinery for the extensive additions to their shops at Conneaut, Ohio, work on which was commenced last week. The machine shop is to be enlarged, 90 x 190 feet, and a new wood working and carpentered shop, 53 x 105 feet, is to be erected. There will also be a new boiler shop of considerable dimensions and a new paint shop. The headquarters are at Cleveland, Ohio, and W. L. Gilmore is superintendent of motive power.

There is considerable comment in the trade regarding the bids submitted to the Navy Department last week for the machinery equipment of the new machine shops at the New Orleans Naval Station. It is intimated that efforts will be made to have the bids rejected and readvertised. We were unable to ascertain the direct cause of such procedure, but have heard considerable complaint about the new method of requiring bidders to quote on entire equipments, as was necessary in this case. The bids were printed in the last issue of *The Iron Age*.

The Bethlehem Steel Company, Bethlehem, Pa., are buying considerable machinery which, it is said, is for the equipment of a new projectile shop.

The Valentine Engineering Company, West End Trust Building, Philadelphia, Cornelius Valentine, president, are acting as consulting and contracting engineers for the Eastern Steel Foundry Company, who were recently incorporated under the laws of New Jersey with a capital stock of \$1,800,000 and who will erect a large steel casting plant at Eddystone, Pa. The main foundry building will be 250 x 550 feet and the machine shop 113 x 250 feet. The Valentine Engineering Company have issued specifications for the fol-

lowing equipment, for which they are now purchasing: One narrow gauge locomotive. Two 50-ton, three 10-ton and seven 30-ton electric overhead traveling cranes, all of 65-foot span, with the exception of the 10-ton cranes, which are to be 38-foot and 27-foot span. One 20-ton yard locomotive crane. One 1600-pound steam hammer. One air compressor, 1000 cubic feet. One 100,000-pound testing machine. Pattern shop machinery. One 6-ton cupola. O. H. charging machine. Air receiver used in conjunction with air compressor. Ten 12-foot gas producers. One 25-ton basic and three 25-ton acid O. H. furnaces. One 40-ton crane scale. Five scales for various parts of works. Three swing frame grinders, one wet tool grinder and two floor stands. One underwriters' fire pump. Two feed pumps. One 4½-foot radial drill. One 24-inch lathe, one 16-inch lathe. One 60 x 60 planer, one 42 x 42 open side planer. Three 200 horsepower boilers. Fourteen cold saws. Two sharpeners. Twenty-five pneumatic hammers. Four cinder cars. One large roll lathe. Two sand grinders. Two 150 horsepower direct connected engines. Two 160-kw. generators. Two 60 horsepower motors.

The Ford City Foundry & Machine Company of Ford City, Pa., expect to place all orders for the equipment of their new shops by June 1. So far they have purchased engines from the Erie City Iron Works, Erie, Pa.; generators and switchboards from the Westinghouse Electric & Mfg. Company, Pittsburgh, and cranes from the Alliance Machine Company, Alliance, Ohio. The company, who were recently incorporated with a capital stock of \$200,000, have broken ground for the erection of their plant, which will include a machine shop, 110 x 500 feet, a foundry with sufficient capacity for handling castings up to 35 tons, pattern shop and power house. The power equipment will aggregate 350 horsepower. All machinery will be operated by electricity. A. G. Greenbaum is secretary.

The American Folding Machine Company, recently organized with George C. Vaughn, formerly of the Vaughn Machine Company of Peabody, Mass., as the head, will erect a plant at Peabody for the manufacture of collar and cuff machinery. It will consist of a machine shop 60 x 165 feet on the ground and a foundry 65 x 125 feet. In addition there will be a pattern and carpenters' shop.

"We intend to equip and run the machine shop, 40 x 200 feet, in addition to the foundries," is a bit of interesting news just received from Smith & Caffrey, proprietors of the Phoenix Foundry, Syracuse, N. Y. The firm have secured the Porter property on North Salina street, consisting of a series of buildings, which, with the exception of the south building, which is occupied by the Syracuse Arms Company, they are having put in condition, preparatory to moving in about July 1. Besides the machine shop there is a large foundry which will be used for making heavy castings, and a boiler shop, 70 x 100 feet, which the firm are fitting up for light bench work. These two foundries will enable them to make castings up to 15 tons and to more than double their present capacity. A new power plant is also being installed. A larger plant has been needed for some time to take care of their business, and now that the buildings have been secured, attention is being given to the requirements in the way of new machinery. Purchases are to be made immediately of a 12-foot boring mill, a large planer and heavy lathe.

The Scranton Machine Company of Scranton, Pa., are looking around for more machinery with which to complete the equipment of their new plant. The company were in the market a short time ago, but their purchases at that time did not nearly meet their requirements.

Though their plans are not yet fully developed, it is the intention of the newly organized St. Louis, Iowa & Dakota Railway Company to erect repair shops at the terminals of the road, St. Louis, Mo., and Sioux City, Iowa. Some grading has been done and the finances arranged for. Bids for the construction of the road, which will be 485 miles long, are being received by Millard F. Smith, 62 Gold street, New York. The capital is \$15,000,000.

A complete foundry equipment is required by the Springfield Foundry Company, Springfield, Mass., who recently purchased a site between the Boston & Albany and the New York, New Haven & Hartford railroads, where they intend to erect a large foundry as an addition to their present plant.

No decisions have been arrived at regarding the equipment of the 1000-ton sugar refinery to be erected at Naguega, Porto Rico. It will be recalled that the Smokeless Combustion Company of 1 Broadway, New York, received bids for this machinery several weeks ago. Representatives of the company will sail for Porto Rico on Saturday and will return in about ten days, when the orders will be placed.

Bids are being received at the office of Frank Klepetko, 8 and 10 Bridge street, New York, for an entire smelting plant equipment. The machinery, we are informed, is for installation in connection with a Michigan Copper property, and is to be purchased by a new company which is now being organized. Mr. Klepetko has been retained by the promoters of the enterprise as consulting engineer, and is now looking into the cost of equipment.

The Harrisburg Traction Company, Harrisburg, Pa., are

planning to spend \$2,100,000 on improvements to their system. Additional equipment will be purchased, but it will be some time before this matter is taken up.

C. O. Maillaux, consulting engineer, New York, who has charge of the power equipment, aggregating 12,000 horse-power, for the new plant of the Quaker Portland Cement Company, at North Hampton, Pa., will soon be ready to purchase the motors, 40 or 50 of which will be required. The order for the engines went to the C. & G. Cooper Company, Mt. Vernon, Ohio, and the dynamos to the Crocker-Wheeler Company, Ampere, N. J.

The Northern Engineering Company, 95 Liberty street, New York, have secured a franchise to install an electric lighting plant in Hyattsville, Md., plans for which have not yet been prepared.

Inquiries can shortly be expected from the recently organized Schaghticoke Electric Company of Hoosick Falls, N. Y., for the equipment of their proposed electric plant, the power to be developed by water. President George E. Greene, who is also president of the Bennington & Hoosick Valley Railway Company, has the matter in charge.

The Iola Portland Cement Company has recently ordered from Westinghouse, Church, Kerr & Co. a 280 horse-power 3-cylinder vertical gas engine as an addition to the extensive power equipment of their cement plant at Iola, Kansas. The company operates its plant upon natural gas fuel, and is one of the largest users of gas power in the cement manufacturing field. The present equipment comprises 12 engines of the Westinghouse vertical 3-cylinder and 2-cylinder single acting type, aggregating 2100 horse-power. These engines operate various classes of machinery, such as rock crushers, rotary kilns, line shafting and generators, for supplying light and incidental power throughout the works. With the additional engine the power plant will comprise six engines of 280 horse-power each, five of 125 horse-power each, and two small engines. The 125 horse-power engines are used for driving the kilns and the 280 horse-power for the rotary crushers. The machinery is in general arranged in groups upon sections of counter shafting driven by a single engine either direct connected or rope driven. In point of size the installation has few precedents, and its successful operation under such severe conditions demonstrates the many advantages of gas power for industrial establishments of all kinds.

The Tabor Mfg. Company of Philadelphia has arranged with the Draper Company of Hopedale, Mass., for the manufacture and sale of the Hand Rammed Molding Machines, which the latter firm has been building for its own use. The Draper Company has had probably the longest experience in moulding by machine of any firm in this country; consequently their machines represent the result of years of experimenting, including the trying of many other machines now on the market. At present they have in operation in the Hopedale plant several hundred of these machines. They are light, cheap, on wheels, and do not require power to operate them.

Ackerman & Jefson of Monaca, Pa., have an inquiry out for small steam hammers, to be operated by steam power direct, without the use of belt.

The following announcement is being sent to the trade by the Christensen Engineering Company of Milwaukee: The constantly increasing demand for Christensen Air Brakes and "Ceco" electrical machinery has made a change of our organization necessary. To accomplish this result the owners of the stock of this company have organized the National Electric Company, and the assets, good will, &c., of this company have this day been transferred to the National Electric Company. The purposes, ownership, management and control of the new company are identical with those of the old.

Chas. Mundt & Sons announce that they have secured large and commodious quarters in 441 and 443 Pearl street, corner of William, New York City. For 20 years this company have occupied quarters at 88 and 90 Walker street, manufacturing perforated metals, but the steady growth of their business has forced them to secure a larger plant. They have added several new and improved presses, which will enable them to perforate all metals up to 1/2-inch thick with any perforation desired.

Announcement is made to the effect that the concern heretofore known as the Grant & Harper Machinery Company will be hereafter known as Harper Machinery Company, with headquarters in the Park Row Building, New York.

The Brown Corliss Engine Company, manufacturers of heavy duty Corliss engines, vertical and horizontal hoisting machinery, compressors, rolling mill work, &c., of Corliss, Wis., advise us that they are looking for a number of good agencies to handle their work in different parts of the country. The present agencies are: Woolston & Brew, 89 Cortland street, New York; Woolston & Brew, 176 Federal street, Boston, Mass.; J. Pierpont & Co., 517 Arcade Building, Philadelphia, Pa.; Pittsburgh Gauge & Supply Company, Pittsburgh, Pa.; Brown, Beal & Co., San Francisco, Cal.; Southern Car Mfg. & Supply Company, Beaumont, Texas.

Charles L. Eidlitz, electrical engineer, St. James Build-

ing, New York, who received the subcontract for the engines and entire electrical equipment for the 600 horse-power plant for the addition to the Museum of Natural History, has not yet made any purchases. A. R. Wolff, consulting engineer, 130 Fulton street, has the subcontract for the boilers. Later this equipment will be duplicated, making the ultimate capacity of the plant 1200 horse-power.

Rossiter, MacGovern & Co., New York, have issued a list of lighting generators for both alternating current and series arc work, which they are offering at very low figures. The machines are somewhat out of date, but are guaranteed electrically and mechanically perfect.

## Metal Market.

NEW YORK, May 20, 1903.

**Pig Tin.**—Throughout the entire week the market suffered a steady decline. Prices fell about 20 points here and 15 shillings in London. Business was extremely dull, and a general listlessness was manifest in the trade. At the close to-day the quotations for spot to June ranged from 29.45c. to 29.65c. London closed £134 for spot and £133 futures. The arrivals thus far this month aggregate 2427 tons, and the "afloats" are figured at 4019 tons. The half monthly shipments make a very large showing, amounting to 2840 tons as against 2400 tons for the corresponding period of last year. A week from to-day the Banca sale will be held in Holland, at which 2500 tons will be disposed of. While this is an unusually large quantity it is the same amount that was sold last month.

**Copper.**—Despite the bullish talk which characterized the Copper share market during the last week and its attendant influence on the trade generally, the market for the metal here was very dull and uninteresting. Prices failed to respond to the bullish programme, and as far as outside lots are concerned offerings were made which were somewhat lower than any of the week previous. The "official" quotation is unchanged from last week, being 14.75c. to 15c. for Lake and Electrolytic and 14.50c. to 14.75c. for castings. Outside offerings of Lake and Electrolytic are made at various prices from 14.50c. to 14.75c., and it is said that any quantity of casting stock can be had at 14c. The London market has experienced another sharp decline, spot being quoted to-day £62 12s. 6d. and futures £62. It will be observed that a discount of 12s. 6d. now prevails on futures. This is taken as an indication of lack of confidence among English buyers. Best Selected declined just £1 during the week to £66 15s. Exports thus far this month have been very light, amounting to only 5054 tons as compared with 8115 of last month. This is taken as a further proof of the disinclination of European consumers to engage at present prices. The comparative statement of apparent consumption of Copper in the United Kingdom, as per Board of Trade Returns, published by the New York Metal Exchange, shows an apparent decrease in consumption of almost 10,500 tons, and is as follows:

|   |        |        |
|---|--------|--------|
| Stocks, January 1.                                  | 1903.  | 1902.  |
| London, Liverpool and Swansea.....                  | 11,270 | 15,340 |
| Imports January to April 30.....                    | 45,352 | 65,557 |
| Exports, same period.....                           | 56,622 | 80,897 |
|   | 21,635 | 24,261 |
|   | 34,987 | 56,636 |
| Stock, April 30, London, Liverpool and Swansea..... | 7,840  | 19,020 |
| Apparent consumption for four months..              | 27,147 | 37,616 |

**Pig Lead.**—There is no change here, the American Smelting & Refining Company still quoting 4.37 1/2c. for Desilverized, New York delivery, in carload lots. St. Louis is said to be easy at 4.17 1/2c., and London declined to £11 12s. 6d. The latter figure shows a drop of 6 shillings and three pence as compared with last week's cable.

**Spelter.**—There is no change whatever here and the St. Louis figure is also unchanged. The quotation for spot is 5.75c. The London cable to-day announces £20 17s. 6d., which is a decline of 10 shillings, as compared with last week.

**Antimony.**—We quote Cookson's at 7 1/2c.; Hallett, 7c., and other brands at 6 1/2c. The market is weak.

**Nickel.**—We continue to quote 40c. to 45c. for large quantities and 50c. to 60c. for small lots.

**Quicksilver.**—The market is \$47.50 for flasks of 76 1/2 lbs.

**Tin Plate.**—The situation contains nothing new. Production is being rushed in anticipation of the coming season. The official quotation continues at \$3.80 for box of 14 x 20 100-lb. Cokes, f.o.b. mill, which is equivalent to \$3.99, New York. The Swansea market declined 1 1/2 pence to 11 shillings 10 1/2 pence.

The Franklin Steel Works announce that their Joliet factory is now open for business and that orders for standard toe calks are being taken.



## New York.

NEW YORK, May 20, 1903.

**Pig Iron.**—Beyond small lots for early delivery nothing has been done and buyers are showing very little interest in the market. So far as contracts for future deliveries are concerned the market is entirely nominal. Furnaces report that deliveries are being sharply called for by the majority of their customers, so that consumption apparently is proceeding at the usual heavy rate. We quote, for delivery at New York and tidewater, nominally: Northern No. 1, \$20.50 to \$21; No. 2 Foundry, \$19.50 to \$20.25; No. 2 Plain, \$19 to \$19.50. Tennessee and Alabama brands: No. 1 Foundry, \$20.25 to \$20.75; No. 2, \$19.75 to \$20.25, and No. 3 Foundry, \$19.25 to \$19.50.

**Steel Rails.**—Only moderate lots are being contracted for. Some uncertainty is felt concerning the somewhat numerous reports of the cessation of improvements by important railroad systems. There are reports current of offerings of foreign Steel Rails at less than \$26, duty paid. The Eastern mills continue to quote \$28 at mill for standard sections.

**Cast Iron Pipe.**—The city of New York bought 800 tons from an Eastern foundry, which was the largest transaction of the week. The demand for small lots continues active. Prices in carload lots are maintained at \$36.50, per gross ton, at tidewater, for 6 and 8 inch, and \$35.50 for 12-inch and upward.

**Finished Iron and Steel.**—Small orders for Plates have been less numerous the past week, but an occasional fair sized block is placed, which keeps up the average. Another lot of several hundred tons has been sold for delivery on the Pacific Coast for pipe work and about 2500 tons will be closed this week for riveted pipe in connection with gas work in this city. The Eastern Plate mills are in comfortable shape and are not pressing for business, but are in position to execute urgent orders quite promptly. Prices run from 1.95c., New York, for 100-ton lots and less, to 1.78c. for large contracts. Business in the Structural line has been limited. A great deal is in sight which is sure to be placed in time, but the local building trades troubles are causing capitalists to await developments. The American Bridge Company have now settled all labor controversies with their men and are prepared to push actively all work secured by them. The Bar Iron trade is unsettled, with prices tending toward a level with Soft Steel Bars. Transactions have therefore been light. Railroad Spikes are active at 2c., which is a reduction on recent open quotations. We quote, at tidewater, as follows: Beams, Channels and Zees, 1.75c. to 2c.; Angles, 1.75c. to 2c.; Tees, 1.80c. to 2c.; Bulb Angles and Deck Beams, 1.90c. to 2.25c. Sheared Steel Plates, in carload lots, are 1.85c. to 2c. for Tank, 2c. to 2.10c. for Flange, 2.10c. to 2.20c. for Marine and 2.35c. upward for Fire Box. Refined Bars are 1.80c. to 2c.; Soft Steel Bars, 1.75c. to 1.90c.

**Old Material.**—Steel Scrap is in strong demand and prices are maintained, but Iron Scrap is very weak as a result of lower prices for Bar Iron. Relaying Rails are in demand, with prices unchanged. We quote, f.o.b. cars vicinity New York, per gross ton, as follows:

|  |                    |
|--|--------------------|
| Old Iron Rails.....                    | \$24.00 to \$25.00 |
| Old Steel Rails, long lengths.....     | 22.00 to 22.25     |
| Old Steel Rails, short pieces.....     | 19.25 to 19.50     |
| Relaying Rails, heavy sections.....    | 27.00 to 28.00     |
| Relaying Rails, lighter sections.....  | 29.00 to 30.00     |
| Old Car Wheels.....                    | 20.00 to 21.00     |
| Old Iron Axles.....                    | 29.00 to 30.00     |
| Old Steel Car Axles.....               | 25.50 to 26.50     |
| Heavy Melting Steel Scrap.....         | 19.25 to 19.50     |
| No. 1 Railroad Wrought Scrap Iron..... | 20.00 to 21.00     |
| Iron Track Scrap.....                  | 19.00 to 20.00     |
| Wrought Pipe.....                      | 15.00 to 16.00     |
| Ordinary Light Iron.....               | 11.00 to 12.00     |
| No. 1 Machinery Cast Scrap.....        | 17.00 to 18.00     |
| Stove Plate.....                       | 12.50 to 13.00     |
| Cast Borings.....                      | 9.50 to 10.00      |
| Wrought Turnings.....                  | 15.00 to 15.50     |

E. C. Saunier, manager of the Clinton Iron & Steel Company, manufacturers of Pig Iron, announces that his new offices will be located in the Blair Building, 24 Broad street.

John Leonard & Co., Iron and Steel Scrap, have removed their offices from the St. Paul Building to the Singer Building, 149 Broadway.

## The Tin Plate Scale.

At the hour of going to press the conference between the officials of the American Tin Plate Company and the Amalgamated Association of Tin Workers, which has been in session for more than a week, had not been concluded. It is expected that everything will be settled and signed before to-morrow morning, however. We are advised on good authority that the present rate of wages per ton will continue for another year. The question of limit of output, which has prolonged the conference considerably, has just been settled. It was de-

cided to increase this by from 10 to 15 per cent. Other matters before the representatives are of a minor nature.

## Interests Represented in the New York Building Trades.

The following associations are represented in the new Employers' Association of the New York Building Trades:

Master Carpenters' Association.  
Master League of Cement Workers.  
Electrical Contractors' Association.  
Marble Industry Employers' Association.  
Tile, Grate and Mantel Association.  
Iron League.  
Employing Plasterers' Association.  
Hod Hoisting Association.  
Society of Architectural Iron Workers.  
Employers' Association of Roofers and Sheet Metal Workers.  
Association of Interior Decorators and Cabinet Makers.  
Gas and Electrical Fixtures Association.  
Mason Builders' Association.  
Master Painters' and Decorators' Association.  
Association of Dealers in Masons' Builders' Material.  
Association of Master Plumbers.  
Composition Roofers' and Water Proofer's Association.  
Shorers' Association.  
Parquet Floor Association.  
Decorative Glass Association.  
Association of Wire Work Manufacturers.  
Ornamental Bronze and Iron Masters.  
Association of Plaster Manufacturers.  
Manufacturing Wood Workers' Association.  
Blue Stone Dealers' Association.  
Fire Proof Manufacturers.  
New York Metal Trades Association.  
Master Stair Builders' League.  
Fire Proof Door and Window Manufacturers' Association.  
Contractors' Protective Association.  
Stone Mason Contractors' Association.

The National Machine Tool Builders' Association will hold their semiannual meeting at Worcester, Mass., Tuesday and Wednesday, June 9 and 10. The local machine tool builders have appointed a committee consisting of E. W. Whitmore of the Prentice Bros. Company and Enoch Earle of P. Blaisdell & Co. to make the necessary arrangements for entertaining the members.

The Christensen Engineering Company of Milwaukee have opened offices in the Old Colony Building, Chicago. Charles G. Burton, manager of the Chicago agency for the Ceco electrical machinery, has removed from the merchants' Loan Trust Building into the new office, and the air brake department is in charge of J. E. Eldred, Jr.

The H. C. Frick Coke Company of Pittsburgh, and also several other coke concerns, have recently blown out a large number of coke ovens in the Connellsville region, owing to the fact that there is a surplus of coke on the market at the present time.

The roll turners at Youngstown, Ohio, are demanding nine instead of nine and one-half hours per day in lieu of an increase of 25 cents a day in wages. They are at present receiving \$3.50 per day for nine and one-half hours work.

It is asserted that the first patent ever granted in this country was the one issued to Samuel Hopkins July 31, 1790, for the manufacture of potash. It was signed by George Washington, President of the United States, and Timothy Pickering, Secretary of State, but no trace of it can be found after arduous search.

### Iron and Industrial Stocks.

Transactions have been on a comparatively limited scale, with prices inclined downward during the greater portion of the week. The prevailing temper of operators in stocks has been bearish, everything unfavorable being used to depress prices, while favorable developments have been practically ignored. Declines have therefore been numerous. American Can common, which had been selling up to  $7\frac{1}{4}$  the middle of last week, sold down to  $6\frac{1}{2}$  on Tuesday of this week, and the preferred declined from 47 to  $44\frac{1}{2}$ ; American Car & Foundry common from  $39\frac{1}{4}$  to 38; American Locomotive common from  $25\frac{3}{4}$  to  $24\frac{3}{4}$ ; Colorado Fuel from  $70\frac{7}{8}$  to  $66\frac{1}{2}$ ; Dominion Steel from  $28\frac{3}{8}$  to  $21\frac{3}{4}$ ; Pressed Steel common from  $59\frac{3}{4}$  to  $57\frac{1}{2}$ , and the preferred from 92 to  $89\frac{1}{2}$ ; Republic common from  $18\frac{1}{4}$  to 16, and the preferred from  $77\frac{1}{2}$  to  $75\frac{1}{2}$ ; Sloss-Sheffield common from  $58\frac{3}{4}$  to  $53\frac{1}{2}$ ; Tennessee Coal & Iron from  $62\frac{3}{4}$  to  $58\frac{1}{4}$ ; Steel common from  $34\frac{1}{4}$  to 33, and the preferred from  $83\frac{3}{4}$  to  $82\frac{1}{2}$ . The business in the United States Steel new 5 per cent. bonds has been on a large scale during the past week, coincident with the expiration of the conversion privilege on Saturday the 16th. Prices have advanced considerably. Sales had been made as low as 83 on Friday, while on Tuesday of this week  $85\frac{1}{2}$  was reached. It is estimated that about \$150,000,000 in par value of preferred stock has been converted into bonds.

The Westinghouse Electric & Mfg. Company have issued a circular offering to stockholders of record of May 23 next the privilege of subscribing to \$4,500,000 of new stock at \$80 per share of \$50, at the rate of one share of such new stock for every four shares of existing stock. Subscriptions must be made not later than June 8 at the local company's office, applications to be accompanied by a check of \$30 for each share subscribed for. Subsequent payments are to be made at the rate of \$25 per share each on July 23 and on September 14. The second and third installments may be discounted at the rate of 4 per cent. per annum, but only at the time of subscription. Holders of the stock will be entitled to participate in any dividends declared for the quarter ending September 30 next. Subscription rights for fractional amounts of stock may be purchased or sold at the New York office of the company.

**Dividends.**—Chicago Pneumatic Tool Company have declared a quarterly dividend of  $1\frac{3}{4}$  per cent.

American Iron & Steel Mfg. Company of Philadelphia have declared the regular quarterly dividend of  $1\frac{1}{4}$  per cent. on the preferred stock, payable July 1. Transfer books close June 24.

The directors of the Barney & Smith Company of Cincinnati, Ohio, have declared the regular dividend of 2 per cent. quarterly on the preferred stock, payable June 1. The annual meeting of this company will be held on June 2, and it is said that the Mellon interests of Pittsburgh may enter the directory.

American Steel Foundries Company have declared the usual quarterly dividend of  $1\frac{1}{2}$  per cent. on the preferred stock, payable June 1.

### In Memory of B. F. Jones.

(By Telegraph.)

PITTSBURGH, PA., May 20, 1903.—On Tuesday night, May 19, a mass meeting of the men employed by the Jones & Laughlin Steel Company was held on the South Side, Pittsburgh, at which resolutions of regret and sympathy were passed over the death of their employer, B. F. Jones. The men expressed a desire to attend the funeral services in a body, and this will be arranged if possible.

The funeral services of Mr. Jones will be held at his late residence, on Irwin avenue, Allegheny, on Friday morning, May 22, at 10 o'clock.

Mr. Jones was a member of the American Society of Civil Engineers, the American Institute of Mining Engineers, the Engineers' Society of Western Pennsylvania, the Academy of Science, the Society of Arts, Manufactures and Commerce of London, the Bibliophile Society of Boston, the Duquesne, Pittsburgh, Union and Americus clubs of Pittsburgh, the Allegheny County Club, the Union League Club of New York, the Manufacturers' Club of Philadelphia. He was also president of the American Iron and Steel Association, director of the Jones & Laughlin Steel Company, People's National Bank, Pittsburgh Trust Company, National Union Fire Insurance Company, West Pennsylvania, Passavant, Allegheny, General and Mercy hospitals, and the Allegheny Cemetery.

The members of the Engineers' Society of Western Pennsylvania have appointed Samuel Diescher, Ralph Crooker and E. K. Morse a committee to prepare resolu-

tions upon the death of Mr. Jones, who was a member of the society since 1881.

It was stated yesterday by an official of the Jones & Laughlin Steel Company that there will be no change whatever in the personnel or policy of the company as a result of the death of Mr. Jones, who for years held complete control of the company.

### The Meeting of Metal Trades Representatives at Cincinnati.

(By Telegraph.)

At the last meeting of the Administrative Council of the National Metal Trades Association it was decided to invite secretaries of local metal trades associations in various cities and district chairmen and vice-chairmen of the National Metal Trades Association to Cincinnati for the purpose of demonstrating the workings of the Cincinnati Metal Trades Association and discussing features of local associations with a view of bringing the secretaries of the locals in closer touch with one another and bringing all into closer relations with the national organization. Such a meeting it was decided would prove beneficial to all concerned, as the secretaries of comparatively new locals would be benefited by the experience of the Cincinnati Metal Trades Association, which is now running smoothly along proven lines, and it is thought that some plan will be formulated whereby the locals will be brought into closer relationship with the national body and thus keep posted on labor movements in all sections of the country, one of the most interesting features of the Cincinnati Metal Trades Association being the Employment Department. This section of the work will of course receive close attention. The outcome of the Cincinnati meeting will doubtless include a more extended adoption of the employment department throughout the country.

The meeting has been called for Thursday and Friday of this week, and among the delegates now in the city who will attend are:

A. C. Pessano, Great Lakes Engineering Company, Detroit, Mich.  
C. F. Wieland, the Kemp Smith Mfg. Company, Milwaukee, Wis.  
F. A. Stillman, Watson-Stillman Company, New York.  
H. C. Hunter, New York Metal Trades Association, New York.  
W. E. Griggs, Jamestown, N. Y.  
H. M. Latham, Latham Machinery Company, Chicago, Ill.  
W. Grant King, Iroquois Iron Works, Buffalo, N. Y.  
G. W. Watts, Canadian General Electric Company, Toronto, Can.  
S. Falkenau, Falkenau-Sinclair Machine Company, Philadelphia, Pa.  
Fred. A. Scheffler, Marine Engine & Machine Company, Harrison, N. J.  
P. J. Kendig, Seneca Falls Mfg. Company, Seneca Falls, N. Y.  
F. J. Copeland, Sullivan Machinery Company, Chicago, Ill.  
F. P. Ide, A. L. Ide & Sons, Springfield, Ill.  
F. E. Wuerpel, Dehner-Wuerpel Mill Building Company, St. Louis, Mo.  
F. C. Wheaton, Dodge Mfg. Company, Toronto, Canada.  
F. D. Wanning, Birmingham Iron Foundry, Derby, Conn.  
J. B. Wright, National Cash Register Company, Dayton, Ohio.  
E. C. Wells, Quincy Engine Works, Quincy, Ill.  
J. Kirby, Jr., Dayton Mfg. Company, Dayton, Ohio.

James E. McNary, Empire Building, Pittsburgh, has been appointed general sales agent for the Pittsburgh district for the sale of the Watertown high speed and four-valve engines, made by the Watertown Engine Company, Watertown, N. Y. These engines are made in sizes from 15 to 300 horse-power, and embody some special features which make them well adapted for electric lighting and power plants.

The boilermakers in Pittsburgh are on strike, having been unable to agree on a new wage scale with the manufacturers. The men demand 50 cents an hour and an eight-hour day. The manufacturers offered 40 cents an hour and nine hours a day, which was refused. A recent conference was held between a number of boiler manufacturers and a committee from the employees, but no settlement of the trouble was reached.

The creditors of the Aultman-Miller Company will meet at Akron, Ohio, in June to select a trustee. The total assets are given as \$2,783,000, and the liabilities, \$1,834,000.



# HARDWARE.

**M**ANUFACTURERS and shippers of American goods to Canada are directly interested in the tariff war, if it may be so termed, which is in progress between that country and Germany. The existing condition of things has called for a new export regulation in regard to invoices on goods shipped to Canada, to which, of course, careful attention must be given in order to avoid trouble or delay. At the same time the result of the increased tariff on German goods should give to American manufacturers of competing goods a better opportunity to place their products in the Canadian market. Our manufacturers of Hardware and related products who are alert in the cultivation of foreign trade may be trusted to avail themselves of the larger opening thus presented.

American manufacturers in most lines of Hardware and allied products find that in spite of the differential tariff in favor of English goods their shipments are generally of very satisfactory and in most lines increasing volume. This preferential treatment of the United Kingdom, by which a 33 1-3 per cent. differential is given to English manufacturers, is distasteful to German authorities, who have in reply discriminated against some Canada products. To such discrimination Canada replies by imposing a surtax of 33 1-3 per cent. on all goods of German production, or any goods from any source the chief value of which originates in Germany. This would accordingly apply to goods partly made in Germany and finished here. The operation of the tariff as now constituted is accordingly as follows: Suppose an article in the Canadian tariff pays a duty of 30 per cent., the differential accorded Great Britain would permit the entrance of their goods on a payment of 20 per cent. duty; the surtax against Germany would increase their duty to 40 per cent., while the goods emanating from the United States would bear the regular duty of 30 per cent. In lines of goods in which our manufacturers are competing with German manufacturers for the Canadian market there is, so far as the matter of duty is concerned, an advantage which may in some cases turn the scale in their favor, especially as American products are, on the whole, regarded with more approval in that market than those of Germany.

In addition to suggesting a special effort at this time to secure business in Canada, it is important that our exporters and manufacturers shipping goods to that country should be advised of the new Canadian customs regulation which requires a declaration as follows to be stamped or written on the face or back of invoices of all goods exported to Canada:

WHEREAS, German goods are subject to a surtax in Canada, I certify that none of the articles included in this invoice are the produce or manufacture of Germany, and that the chief value of none of said articles was produced in Germany, save and except all articles opposite which the word "Germany" is written on this invoice.

(Signature).....(Exporter).

This form is to be used in addition to the declaration now in use, and went into effect May 15, 1903. Failure to comply with this regulation will result in the detention of goods in the hands of customs authorities at the shipper's risk.

Notwithstanding the extent to which our manufacturers have been engrossed in the care of domestic business, to the neglect sometimes of their foreign trade, there

is no doubt that more care and expense than ever before are being devoted to the finding of markets for American products abroad. The custom of quoting c.i.f. (cost, insurance and freight) is constantly growing, and the overseas buyer is thus given a delivered price which, at once after the order is placed, enables him to sell the goods in anticipation of their arrival, knowing as he does exactly what the cost in his country will be. Some of the larger houses who are in a position to make such quotations are often enabled by judicious cabling, having meanwhile obtained options on both goods and freight, to effect large sales to widely separated markets. Anything that thus facilitates transactions is obviously an important factor in extending trade. In the use of these up to date and advanced methods the great corporations are naturally prominent, but many other manufacturers and merchants cultivating export trade are also constantly improving their methods and setting themselves more earnestly to the task of obtaining possession of foreign markets.

## Condition of Trade.

The injurious effect of labor agitation is seen in many parts of the country. From this cause there is some interference with the demand for the lines of goods directly affected and also with the regular course of business, as labor agitations have a depressing effect on trade in general. There is a good deal of apprehension that the summer months may witness an increase of disturbance from this source, but it is hoped that the decided course which manufacturers are beginning to pursue together with conservative counsels on both sides may result in avoiding any serious or general interference with existing prosperous conditions. While in some localities there is unrest from these causes, throughout the country as a whole industry and commerce continue to move satisfactorily, reflecting as they do the general employment of labor and a prevalence of prosperity and enterprise among practically all classes. The fact that there is less than the usual call upon manufacturers for their products is not surprising, as the jobbers generally are well supplied with goods, and any depletion of their stocks is being covered by the shipments which are quite satisfactorily coming in from the factories. Meanwhile the jobbing trade are busily engaged and report a very satisfactory business, though in some respects not up to that of last year. Changes in the prices of Hardware are comparatively few. The tone of the market continues steady and strong. This is the result of the still increasing costs of manufacture as the tendency of labor especially continues upward. This is not so much the result of concerted demands for increased wages as the granting of advances in special cases or to special workmen as the result largely of the existing scarcity of skilled labor. Reports in regard to export trade are on the whole quite satisfactory and reflect the success with which manufacturers are placing their goods in foreign markets. With the material increase in manufacturing facilities, which is one of the results of the prosperous conditions of the past few years, manufacturers realize that before long a foreign outlet for their products will be a very desirable relief from what would otherwise be a condition of over-production.

Chicago.

(By Telegraph.)

In some respects the warmer weather has brought an improvement in business to both manufacturers and jobbers of Hardware during the week, yet, compared with the corresponding time a year ago, there is a decrease. The distribution of summer goods by jobbers, such as

Poultry Netting, Wire Cloth, Lawn Mowers, Refrigerators, Hose, Cordage and kindred goods, has been stimulated materially, but chief interest for the moment centers in some departments of Builders' Hardware, such as Wrought Steel Butts and Strap and Steel Hinges, some manufacturers having readjusted prices, which will doubtless place the trade on a more satisfactory basis. Sales of these goods to the country for both summer and fall delivery recently have been heavy, showing a material increase over business of the same character a year ago, but the city trade not only in this line, but all departments of Builders' Hardware, has suffered from the strikes in the building trade and in other lines, having an unsettling influence. In general Shelf Hardware there has been a fair inquiry from the country also, but city business has been dull. The several large contracts for buildings recently referred to are still pending, with the exception of the New York Wanamaker Building, which has been closed. One or two large contracts for Tools have been closed for fall delivery, but this is the exception rather than the rule, being a month previous to the usual activity in this line. Heavy Hardware has been quiet, yet in the aggregate there has been a fair distribution of Bolts, Nuts, Screws, Tin Plate and Galvanized Sheets. Shovels and Scoops have sold moderately well for fall delivery. Nails and Barb Wire, while quiet, have shown some little increase, but trade in Plain Wire and Wire Specialties has continued unusually active. Much interest is now centered in the crop prospects, and it may be noted that while there has been a shifting of condition of the growing winter wheat crop, the previous high condition has not been fully maintained, yet the prospect is still for a heavy, if not the heaviest, yield on record. The plant has suffered from deterioration, but the general opinion is that warm showers will revive it. In the Northwest spring wheat seeding is about finished and an auspicious start has been made. The acreage is reported to have been slightly increased. Corn plowing and planting is reported two weeks late, but considerable progress has been made during the last week. The crop will be a late one, but a large acreage will doubtless be planted. The oat crop is not entirely satisfactory, in that the start is backward and the acreage below the average. It is reported that provision was made by cordage manufacturers for a more than usually heavy supply of Binder Twine to meet the early crop prospects. It is thought that about 20,000 tons increase over last year will be produced.

#### St. Louis.

(By Telegraph.)

The buying movement continues on a liberal scale, and there is evidently no falling off in the demand upon the Hardware jobbing interests at this point. Much difficulty is still being experienced in supplying the consumers' demands for Wire and Nails, due to the delay in getting supply from the mills. All Shelf Goods, including Builders' Hardware, Tools, &c., come in for a large demand. Sales have been exceptionally good for all classes of summer goods, among them Ice Cream Freezers, Refrigerators, Lawn Mowers, Lawn Sprinklers, Hose, &c. Some belated orders for Steel goods are still being received, amounting to quite a considerable item. The heavy department of the market continues to feel a fairly well sustained demand with quotations on a steady basis. Expression is heard among the trade on the matter of mill prices, and it is thought that some changes are not very far from the point of announcement. The labor outlook is not considered an altogether satisfactory one, and the growing tendency to go out on a strike among certain laboring classes, if continued, is bound to have its influences on general market conditions.

#### San Francisco.

PACIFIC HARDWARE & STEEL COMPANY.—For many years past we have grown accustomed to the methods used by Chicago people in an endeavor to boom their city. We were therefore not altogether surprised when we read in your issue of April 9 an article by your Chicago correspondent, in which he advises that Chicago merchants claim credit for making particularly large

sales in the Builders' Hardware line, including a \$9000 contract for furnishing the Builders' Hardware to be used on the St. Francis Hotel, now in course of construction in San Francisco. This article in itself was not surprising, but taken in conjunction with an article from the same correspondent which appeared in your issue of April 30, in which we are informed that Chicago merchants had secured the contract for supplying the Builders' Hardware to be used in a building being constructed for the Merchants' Exchange of San Francisco, some comment, if not protest, seems to be in order. Now, it is no doubt a very laudable thing to boom Chicago in this fashion. At the same time we cannot sit idly by and permit the impression to be started among your readers that the people on the Pacific Coast, and particularly the people of San Francisco, are not fully informed of the importance of the Hardware houses in their midst, so that they would not even dream of asking a Chicago house for a quotation on a building being put up by them. The truth of the two contracts in question is that they have been placed with a local merchant, and that Chicago or Chicago people had nothing whatsoever to do with the contracts. Many years ago there was a feeling in our midst that to get proper attention our retailers were obliged to go to Eastern markets in order to secure their wants, but this has so long been a matter of the past that it should not have been alluded to at all except to counteract the effort on the part of your correspondent to create the impression that our people on the Pacific Coast do not know of the existence and importance of their own Hardware houses.

Owing to a visit of the President of the United States to our city, San Francisco is just now decked out in its gayest plumage, and has a thorough holiday appearance. This, however, applies to the outward appearance only, and we are pleased to be able to advise that the inside appearance of our stores does not wear the same holiday aspect. Business has been particularly good this spring; is continuing so at the present writing, and the prospects point to a most prosperous season ahead of us.

#### Cleveland.

THE W. BINGHAM COMPANY.—All the Cleveland Hardware jobbers are busy filling orders for immediate shipment. An immense tonnage of goods in the Hardware line went forward from Cleveland last month and the month of May is going to be a "corker." The shortage on some kinds of goods is prevalent all over the United States—that is, the manufacturers have not been able to deliver promptly to the jobber lines of season goods that were ordered early this year, and way back into last year, for the manufacturers claim that on account of the scarcity of material and labor troubles they have been unable to get out certain kinds of goods promptly.

As jobbers represent and carry a great variety of goods retailers of necessity must be a little patient with their jobber friends, and not be too critical because they do not get every item on their orders, as every retailer who does a flourishing business in any section of this great and prosperous country knows full well the scarcity and shortage of many lines and sizes of goods, as he has been up against this proposition many times in the last year.

There seems to be no let up in the demand for many kinds of goods, such as House Trimmings; in fact business is coming in good volume on the whole line, and everything points to a healthy, steady trade for some time to come.

The splendid reports that the newspapers publish in regard to the prospects of crops, especially wheat, are certainly very encouraging and the farmer will be enabled greatly to enlarge his barns and bank account.

Under date of May 7 a New York paper publishes a report from Topeka, Kan., noting that the Kansas farmers estimate the crop of wheat that they expect to gather this year to be 90,000,000 bushels, which is 21,000,000 bushels more than any former yield.

Now it is a well-known fact when fortune smiles on the farmer the shadow of this smile is extended to the balance of us poor people in all sections. That is, all participate in the wealth that comes to them from over-



flowing granaries. Due credit should be given, however, to manufacturers who have many orders on their books that they have been unable to ship promptly. We are just in receipt of the following letter from manufacturers whom we have been pushing hard for a supply of goods, our order having been placed last fall:

We have a good many full carloads of goods on our books that are much older than your orders, and it will be several weeks before we can get these out at the best. Still we are robbing some of these to the extent of the goods we are going to send you next week. We endeavor to treat all our customers fairly and divide up. You are good customers of ours, and you can depend upon our serving you to the best of our ability and a little more.

This goes to prove that many of the manufacturers are crowded with orders, and in order to stop the cry of the jobber for more goods they divide up their shipments so as to keep the jobber quiet, which is the same thing that the jobber must do for the retailer. All cannot be served at once fully, but we believe that the retailers appreciate the efforts of their jobber friends in filling their orders to the fullest extent possible, when the order is in hand.

Patience, gentlemen, patience. "All good things come to those who hustle while they wait." We can assure our friends that Cleveland jobbers have a strenuous hustle on them just at present.

#### Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY.—During the past few weeks the business situation has remained in practically the same condition as outlined in our former reports, with few changes of any kind and none of importance to distinguish this period from prior weeks. A free movement of merchandise still continues, and, although agriculturists are just now busy in the fields with spring work, still the volume of trade is considered very satisfactory. Some lines of seasonable goods are somewhat scarce, and as the demand in some cases is in excess of the supply, the jobbing trade are experiencing some difficulty in supplying the requirements of their trade on these special goods with their usual degree of promptness.

The teamsters' and other strikes that have developed locally within the past week or so have been heralded by the press with a degree of magnitude not warranted by the facts. Omaha has recently received some extensive free advertising in this regard, but beyond a limited interruption to business for a few days, the situation soon settled down to normal conditions.

#### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Since our last report we are unable to note any material change in trade conditions. The Hardware trade is heavier than has ever been known at this season of the year. In fact, the spring trade is usually over before May 1, but business is now rushing, owing to the tremendous demand for goods throughout the country, and the policy of the retail Hardware merchants to buy in small quantities and supplying their wants more than was the custom a few years ago.

If any of our Northern friends doubt the ability of the Southerners to hustle, we point them to a circumstance which occurred in this county this week, where the Tennessee Central Railroad Company graded and completed 1250 feet of railroad between 6 p.m. of one day and 6 a.m. of the next day, and had the trains running over the track doing business.

The wheat crop in this section is not looking as well as it did in the first part of April. Collections are satisfactory.

#### Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Strikes and lockouts are still the order of the day and arbitration or end not in sight. The President will be here next week, and his coming and reputation as a strike settler may be what is needed to mix the oil and water, as they will not come together of their own accord.

While the Hardware trade has not as yet been affected by the strikes, as one would expect, it certainly will be later, unless there is a prompt settlement. Other lines, especially grocers, feel the situation keenly. Trade

outside the city comes in good volume and everything indicates a good summer and fall business.

A recent sale of a large body of timber land indicates clearly one of our resources that attracts Eastern attention and capital. The sale was on a basis of \$2.50 per thousand for standing timber, equaling \$70 per acre for a tract that cost but \$1.25 per acre 20 years ago, showing a profit that can only be excelled in trust making or the Hardware business.

Lumber exports continue on a large scale for the Orient. Since our last one steamer cleared with 3,500,000 feet for a cargo and another with 2,400,000 feet.

#### Louisville.

W. B. BELKNAP & Co.—The volume of business is holding its own. Just at this time of the year we hardly ever look for an extensive movement. Active hands are in the fields and the crops, from whence comes our strength, financial and bodily, must be put in the ground and cared for. It is between seasons, and while a great deal of business is being booked for future delivery (as nearly everybody seems solvent and willing to buy) the immediate wants are not so pressing.

This is influenced, too, somewhat, by the building strikes all over the country. The fishing season has arrived and pretty soon there will be turnips and green apples for the asking (or rather the taking). We always look for more or less discontent with one's job about that time. If the strikes can be conducted, however, on the American idea that, "while everybody has a right to quit, anybody has a right to work unmolested to support his wife and children," there can be no very serious or permanent harm come of it.

### NOTES ON PRICES.

Wire Nails.—General demand is good, while a number of large contracts, placed some time ago, have expired and new orders are being placed at present prices. Mills are running to their full capacity. The market is firm and quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

|  |        |
|--|--------|
| Jobbers, carload lots.....             | \$2.00 |
| Retailers, carload lots.....           | 2.05   |
| Retailers, less than carload lots..... | 2.15   |

New York.—Orders from territory tributary to this point are being received in good volume. The demand for Nails from store shows the effect of the curtailment of building operations in this city. The market is firm at the following quotations: Single carloads, \$2.20; small lots from store, \$2.25 to \$2.30.

Chicago, by Telegraph.—There has been some little improvement in the demand for Wire Nails, but compared with a year ago business shows a decrease. There is still a fair distribution on old contracts and a firm tone prevails. The jobbing trade has been moderate without new features. Official quotations are \$2.15 to \$2.20 in carload lots, f.o.b. Chicago. Broken cars sell at 5 to 10 cents higher. For galvanizing 75 cents per keg and for tinning \$1.50 extra per keg is charged.

St. Louis, by Telegraph.—Mill shipments are not altogether satisfactory, and jobbers continue to have difficulty in promptly meeting the demand, which continues in very fair volume. In small lots from store \$2.35 is quoted.

Pittsburgh.—A moderate amount of new business is being placed, which with specifications on old contracts keeps the Wire Nail mills very busy. There is still some difficulty experienced in getting prompt deliveries of Steel, but the railroads are now giving uniformly good service. Prices are well maintained and are as follows: \$2 in carloads to jobbers, \$2.05 in carloads to retailers and \$2.15 in small lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days; for galvanizing Nails 75 cents per keg is charged and for tinning Nails \$1.50 per keg extra.

Cut Nails.—The tone of the market is firm and the demand steady. The supply of steel is still short of requirements and interferes with prompt deliveries. Quotations are as follows: \$2.15, base, in carloads, and \$2.20 in less than carloads, f.o.b. Pittsburgh, plus freight in

Tube Rate Book to point of destination; terms 60 days, less 2 per cent. off in 10 days.

*New York.*—The demand is well sustained, considering strike conditions at this point among the building trades. The market continues firm, and quotations for carloads and less than carloads are as follows:

|                                 |        |
|---------------------------------|--------|
| Carloads on dock.....           | \$2.29 |
| Less than carloads on dock..... | 2.33   |
| Small lots from store.....      | 2.40   |

*Chicago, by Telegraph.*—The market is without new features, the difficulty of obtaining Sheet Steel permitting only a moderate fulfillment of contracts. There is a fair jobbing order trade, and the tone of the market is firm on the basis of \$2.30 in carload lots and \$2.35 in less than carload lots for Steel, Chicago. Iron Nails are held at \$2.45 to \$2.50 per keg from store.

*St. Louis, by Telegraph.*—The demand on the jobbers for Cut Nails is very well sustained. The quotation in small lots from store is as follows: Steel, \$2.45; Iron, \$2.50.

*Pittsburgh.*—There is a continued scarcity of Steel which still interferes somewhat with prompt shipments. We also note that Iron Cut Nails are scarce. Prices are being firmly observed and are without change. We quote: Steel Cut Nails, \$2.15, base, in carloads and \$2.20 in less than carloads; Iron Cut Nails, \$2.25, base, in carloads and \$2.30 in less than carloads, plus freight in Tube Rate Book to point of destination, 60 days, less 2 per cent. off in 10 days.

**Barb Wire.**—Considerable business is being placed at current prices, and mills are making prompt deliveries, having caught up to a considerable extent on back orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

|  | Painted. | Galv.  |
|--|----------|--------|
| Jobbers, carload lots.....             | \$2.30   | \$2.60 |
| Retailers, carload lots.....           | 2.35     | 2.65   |
| Retailers, less than carload lots..... | 2.45     | 2.75   |

*Chicago, by Telegraph.*—New business has been a little more satisfactory, but with a more ample car supply goods are being distributed more readily. The jobbing trade has continued moderate and the market has remained in a satisfactory condition, prices being well maintained. Galvanized Wire has continued to sell on the basis of \$2.75 to \$2.80 in carload lots, and Painted at \$2.45 to \$2.50, the outside price being to retailers. For small lots 5 to 10 cents extra is charged. Staples in carload lots sell as follows: Polished, \$2.30 to \$2.35, and Galvanized, \$2.70 to \$2.75, the outside price being to retailers.

*St. Louis, by Telegraph.*—The late demand for Barb Wire is very good. Jobbers continue to quote in small lots from store as before: Painted, \$2.60; Galvanized, \$2.90.

*Pittsburgh.*—Orders coming into the mills at this time are mostly for small lots, but specifications on the large contracts placed some time since are coming in very freely. Mills are making prompt shipments, there being little if any delay in this respect. The tone of the market is firm and prices are without change. We quote, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.30; Galvanized, \$2.60, in carloads to jobbers; Painted, \$2.35; Galvanized, \$2.65, in carloads to retailers; Painted, \$2.45; Galvanized, \$2.75, in small lots to retailers.

**Smooth Fence Wire.**—Demand continues large, and the mills have enough orders on their books to keep them employed for some time. The market is firm at the following quotations, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

|                          |        |
|--------------------------|--------|
| Jobbers, carloads.....   | \$1.90 |
| Retailers, carloads..... | 1.95   |
| Less than carloads.....  | 2.05   |

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

|                     | 6 to 9 | 10  | 11  | 12  | 12½ | 13   | 14   | 15 | 16 |
|---------------------|--------|-----|-----|-----|-----|------|------|----|----|
| Annealed....Base.   | \$0.05 | .10 | .15 | .25 | .35 | .45  | .55  |    |    |
| Galvanized...\$0.30 | .35    | .40 | .45 | .55 | .65 | 1.05 | 1.15 |    |    |

*Chicago, by Telegraph.*—The new tonnage placed continues to take up the full current output of the mills, and

with already full order books the market remains very strong with a confident tone. The jobbing trade has continued satisfactory. The following are the prices current: Nos. 6 to 9 sell at \$2.05 to \$2.10, in carload lots on track, and \$2.15 to \$2.20 in less than carload lots from store, Galvanized bringing 30 cents extra for Nos. 6 to 14, and 60 cents extra for Nos. 15 and 16.

*St. Louis, by Telegraph.*—The jobbing trade continues to report very good shipment of Smooth Fence Wire. No. 9 is quoted at \$2.30, and Galvanized at \$2.60 in small lots from store.

*Pittsburgh.*—Demand continues fairly active, and specifications on contracts are coming in at a very satisfactory rate. Certain sizes of Galvanized Wire are reported to be somewhat difficult to obtain, owing to the continued scarcity of Steel Billets and Rods. Prices are firm, and are as follows: Plain Wire, \$1.90, base, for Nos. 6 to 9 in carloads to jobbers, \$1.95 in carloads to retailers and \$2.05 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

**The Stanley Works.**—Under date May 15, the Stanley Works, New Britain, Conn., and 79 Chambers street, New York, issue a revised discount sheet, which will be regarded by the trade with especial interest, as in it they endeavor to simplify their line of discounts, and to this end have brought their base discounts nearer to the net selling prices. This is illustrated in the case of Strap and T-Hinges, on which the discount is made, 80 and 5 per cent., instead of the former base discount which had become quite nominal. The new discounts are accordingly intended to represent more closely the actual selling prices, and are as follows, terms net cash 30 days, or 2 per cent. discount for cash in ten days from date of invoice:

| Goods.  | Class numbers.             | Discount, per cent. |
|---|----------------------------|---------------------|
| <i>Ball Bearing Butts.</i>                      |                            |                     |
| Wrought Bronze Metal.....                       | 180, &c.....               | 60                  |
| " Steel.....                                    | B.B. 239, &c.....          | 60                  |
| " ".....  | B.B. 241½, &c.....         | 60                  |
| " ".....  | B.B. 241, &c.....          | 60                  |
| " " extra heavy.....                            | 250, &c.....               | 60                  |
| " " extra heavy, with-<br>out holes.....        | 851.....                   | 60                  |
| " " ornamented.....                             | B.B. 65, &c.....           | 60                  |
| <i>Loose Pin Butts with Tips.</i>               |                            |                     |
| Ornamented Ball Tips.....                       | 65, &c.....                | 60                  |
| Plated, ".....                                  | 239, &c.....               | 60                  |
| " ".....  | 241½, &c., 605.....        | 60                  |
| " ".....  | 241, &c.....               | 60                  |
| Japanned, ".....                                | 727, 729, 731.....         | 70, 10              |
| " ".....  | 733.....                   | 75                  |
| Bright Steel, ".....                            | 823.....                   | 80, 20              |
| Extra Heavy, ".....                             | 249, &c.....               | 66 2-3              |
| Figured, ".....                                 | 50.....                    | 60                  |
| Japanned, Steeple Tips.....                     | 726, 730.....              | 70, 10              |
| Bright Steel, ".....                            | 822.....                   | 80, 20              |
| <i>Loose Joint Butts with Tips.</i>             |                            |                     |
| Bronzed, Ball Tips.....                         | 209, 213.....              | 66 2-3              |
| Japanned, ".....                                | 709.....                   | 70, 10              |
| Bright Steel, ".....                            | 823½.....                  | 80, 20              |
| Bronzed, " with Washers.....                    | 211, 215.....              | 66 2-3              |
| Japanned, ".....                                | 711.....                   | 70, 10              |
| <i>Reversible Butts.</i>                        |                            |                     |
| Light, Ball Tips.....                           | 289, &c., 749.....         | 66 2-3              |
| " Narrow, Ball Tips.....                        | 295, &c., 760.....         | 66 2-3              |
| Bright Steel.....                               | 804.....                   | 75                  |
| Japanned and Galvanized.....                    | 751, 1334.....             | 70, 10              |
| Bronzed.....                                    | 244, 242.....              | 70                  |
| Bright Steel, light.....                        | 834.....                   | 75, 10              |
| Bronzed and Japanned.....                       | 288, &c., 288½, 748J1..... | 55, 10              |
| ".....  | 748.....                   | 55                  |
| Bright Steel, loose pin, light nar-<br>row..... | 840.....                   | 75, 10              |
| Plated Steel, loose pin, light nar-<br>row..... | 286, &c., 287, 740J1.....  | 55, 10              |
| Japanned.....                                   | 740.....                   | 55                  |
| Bright Steel, improved pin.....                 | 805.....                   | 75                  |
| Bronzed, loose pin, light narrow.....           | 286½.....                  | 55, 10              |
| <i>Loose Joint Butts without Tips.</i>          |                            |                     |
| Bright Steel, narrow.....                       | 802.....                   | 75                  |
| Bronzed, ".....                                 | 301, 303.....              | 70                  |
| Bright Steel.....                               | 806.....                   | 75                  |
| Plated.....                                     | 228, 230, 232, 234.....    | 70                  |
| Japanned and Galvanized.....                    | 753, 1321.....             | 66 2-3              |
| Wardrobe.....                                   | 837, 837C, 837½C.....      | 60, 10              |
| ".....  | 837½, 835C.....            | 66 2-3              |
| <i>Fast Joint Butts.</i>                        |                            |                     |
| Extra Heavy, without holes.....                 | 850.....                   | 66 2-3              |
| Bright Steel, broad.....                        | 808.....                   | 75                  |
| Plated, broad.....                              | 291, 291½, &c.....         | 60, 5               |
| Japanned and Galvanized, broad.....             | 747, 1319.....             | 55                  |
| Bright Steel, narrow.....                       | 800.....                   | 75                  |
| Plated, narrow.....                             | 279, 280, 755J1, 281.....  | 55, 10              |
| Japanned and Galvanized, narrow.....            | 755, 1315.....             | 55                  |
| Bright Steel, light narrow.....                 | 838.....                   | 75, 10              |
| Plated, light narrow.....                       | 283, 284, &c.....          | 55, 10              |
| Japanned and Galvanized, light<br>narrow.....   | 752, 1317.....             | 55                  |
| Bright Steel, light inside blind.....           | 842.....                   | 75, 10              |
| Plated, light inside blind.....                 | 332, &c., 331.....         | 55, 10              |



|   |                 |        |
|---|-----------------|--------|
| Bright Steel, beveled, light inside blind   | 843             | 75, 10 |
| Plated, beveled, light inside blind         | 333, &c., 333½  | 55, 10 |
| Bright Steel, loose pin, light inside blind | 844             | 75, 10 |
| Plated, loose pin, light inside blind       | 335             | 55, 10 |
| Shutter                                     | 845, 339        | 75, 10 |
| Bright Steel, back flaps                    | 814, 816        | 75     |
| Galvanized and Bronzed, back flaps          | 1311, 1313, 311 | 60, 5  |
| Bronzed, light narrow, beveled              | 283¼, 284¼      | 55, 10 |
| Table Hinges                                | 810             | 75     |
| Pew Door and Chest                          | 818, 820        | 75     |
| Parliament                                  | All numbers     | 70, 5  |
| "   | "               | 70, 5  |
| "   | 832, 274, 273   | 70, 5  |
| "   | 833, 275        | 75, 10 |
| Caseament Hinges                            | 304, 305        | 55, 10 |

**Bolts.**

|                             |                        |        |
|-----------------------------|------------------------|--------|
| Bronzed Mortise, flush      | 361, 361¼, &c.         | 30     |
| Extra Heavy,                | 364, 1000, 1001        | 50, 10 |
| Flush                       | 368, &c., 1004, 1005   | 60     |
| "                           | 372, 1008, 1010        | 50, 10 |
| "                           | 376, 1012, 1014        | 50, 10 |
| "                           | 388, 1016              | 40     |
| "                           | 392, 1018              | 40     |
| "                           | 393, &c., 1020, 1022   | 50, 10 |
| Sunk Flush                  | 396, 400, 1026, 1028   | 50     |
| "                           | 393½, 1030, 1034       | 45     |
| Flat Spring                 | 1050, 1051, 1052, 1054 | 60     |
| Southern Door and Flat Tail | 1046, 1048             | 33 1-3 |
| Canada                      | 1058, 1059, 1060, 360  | 30     |
| Barrel, light               | 1078, 1078½            | 75     |
| " light, bronzed and brass  | 406, 1077              | 50     |
| "                           | 1080                   | 75     |
| " bronzed and brass         | 404, 1108              | 50     |
| " galvanized                | 1324                   | 70     |
| "                           | 1084, 1082, 1081       | 75     |
| " bronzed                   | 408                    | 50     |
| "                           | 1086                   | 75     |
| Light Square, bronzed       | 414                    | 75     |
| Spring                      | 1150 to 1155           | 70     |
| Square                      | 1088, 1090, 1336, 1337 | 66 2-3 |
| " extra heavy               | 1092, 1094, 1098       | 66 2-3 |
| " extra heavy, galvanized   | 1328, 1329, 1330       | 66 2-3 |
| Round and Square Neck       | 1100, 1102, 1332       | 40     |
| Floor Plates and Staples    | 1126, 1128, 1130, 1132 | 60     |
| Japanned Shutter            | 1110, 1112, 1113       | 50, 10 |
| Galvanized                  | 1325, 1326, 1327       | 50, 10 |
| Shutter                     | 1114, 1118             | 20     |
| " Bars                      | 450, 450D2             | 70     |
| "                           | 452, 452D2             | 70, 10 |
| " Fast.                     | 1122, 1124             | 50     |
| Sliding Door Rail           | 491, 491C              | 60, 10 |

**Ornamental Hinges, &c.**

|                           |                            |        |
|---------------------------|----------------------------|--------|
| Wrought Brass Corrugated  | 1403, 1404 D2 N            | 45     |
| Plated Steel              | 1405 D2 N, 1406            | 50     |
| Wrought Brass             | 1407, 1408 D2 N            | 45     |
| Plated Steel              | 1409 D2 N, 1410            | 50     |
| Wrought Brass             | 1411, 1412 D2 N            | 45     |
| Plated Steel              | 1413 D2 N, 1414            | 50     |
| Wrought Brass             | 1415, 1416, &c.            | 45     |
| Plated Steel              | 1417, &c., 1418            | 50     |
| "                         | 1400                       | 50, 10 |
| Wrought Brass Corrugated  | 1429, 1430, &c.            | 50, 10 |
| Ball Bearing Refrigerator | 1338, 1339, 1450           | 50     |
| Ornamental T.             | 1455, 1340, 1341           | 50     |
| Plated Steel              | 1420, 1421, 1422, 1423     | 50     |
| Wrought Brass             | 1421¼, 1421½, 1423¼, 1423½ | 50     |
| Wash Tray                 | 1426, 1427, 1312, 347      | 50, 10 |
| Desk Slides               | 430, 431, 432              | 50, 10 |

**Strap and T Hinges, &c.**

|                                   |                        |            |
|-----------------------------------|------------------------|------------|
| Light Strap, plain and japanned   | 900, 952               | 80, 5      |
| " galvanized                      | 1300, 1300¼            | 70         |
| " bronzed and brass               | 900A, 1850             | 45         |
| Heavy " corrugated, plain         | 935, 955               | 80, 20, 10 |
| " corrugated, galvd.              | 1305, 1305¼            | 70         |
| " corrugated, bronzed             | 1435, 1436, 1434, 1433 | 45         |
| " plain and japanned              | 902, 954               | 80, 20, 10 |
| " galvanized                      | 1302, 1302¼            | 70         |
| Light T, plain and japanned       | 904, 956               | 75, 10, 5  |
| " galvanized                      | 1303, 1303¼            | 70         |
| " bronzed and brass               | 904A, 1854             | 45         |
| Heavy T, plain and japanned       | 906, 958               | 75, 5      |
| " galvanized                      | 1304, 1304¼            | 70         |
| Extra Heavy T, corrugated, plain  | 937, 961               | 80, 20     |
| " and japanned                    | 1307, 1307¼            | 70         |
| Extra Heavy T, corrugated, galvd. | 1307, 1307¼            | 70         |
| " corrugated, bronzed             | 1439, 1440, 1438, 1437 | 45         |
| " plain and japanned              | 908, 960               | 80, 20     |
| " galvanized                      | 1306, 1306¼            | 70         |
| Hinge Hasps, plain and japanned   | 912, 964, 913, 914     | 70         |
| " galvanized                      | 1308, 1308¼            | 70         |
| Long Chest                        | 910, 962               | 70         |
| Trap Door                         | 923, 923½              | 70         |
| Hart's Patent Hinges              | 929, 931, 1342, 1343   | 60         |
| Bulk Shutter and Flank            | 932, 934               | 35         |
| Rolled Plate                      | 940                    | 55, 10     |
| Extra Heavy Hinge Hasp            | 941, &c., 1356         | 75         |
| " Safety " Hasps                  | 915, &c., 1310         | 50         |
| Crate                             | 916, 970               | 50, 5      |
| "                                 | 918, 920               | 70         |
| Crate Light                       | 921, 921¼              | 66 2-3     |
| Basket Trimmings                  | 949, 950               | 50         |
| Atwood's " Little Daisy "         | 1800                   | 55, 10     |
| " " Double Champion "             | 1804                   | 50         |
| " Fast                            | 1808, 1812             | 60, 5      |
| " Heavy " Double Cham-<br>plon "  | 1816, 1817             | 50         |
| " Heavy Hasps and Staples         | 1820, 1821             | 35         |
| Trunk                             | 943                    | 16 2-3     |
| "                                 | 943½                   | 35         |
| " Hart's Patent                   | 945, 946               | 35         |

**Miscellaneous.**

|  |                                  |            |
|--|----------------------------------|------------|
| Shelf Brackets                         | 790, 490, &c.                    | 70         |
| "                                      | 792, 492, &c.                    | 75         |
| Hasps and Staples                      | 976, 978, 1314, 972, 974         | 85         |
| "                                      | All numbers                      | 85         |
| " extra heavy                          | 985                              | 75         |
| Step Ladder Joints                     | 992                              | 20         |
| Mending Plates                         | 995                              | 50, 10     |
| Corner Irons                           | 996, 998C                        | 50, 10     |
| "                                      | 999                              | 20         |
| " Braces                               | 997                              | 66 2-3     |
| "                                      | 997½, &c.                        | 50         |
| Wagon Stake Holders                    | 993                              | 45         |
| Burrs                                  | 991                              | 60, 10     |
| Washers                                | 994                              | 25c. lb.   |
| " for Butts                            | 994½                             | 60, 10     |
| Chest Handles                          | 1206, 1322                       | 70         |
| "                                      | 1208                             | 70, 10     |
| Tub                                    | 1209, 1323                       | 70         |
| Shutter                                | 1200                             | 60         |
| Pulls                                  | 460, 461, 763                    | 50, 10     |
| Lifts                                  | 465, 466, 765                    | 60         |
| "                                      | 281, 781J1, 783, 783J1, 483, 487 | 45         |
| "                                      | 483D2, 487D2                     | 50         |
| "                                      | 483SD2, 487SD2                   | 60         |
| "                                      | 483H, 487H                       | 45         |
| "                                      | 481, 485                         | 60, 10     |
| "                                      | 481D2, 485D2                     | 60, 10, 10 |
| "                                      | 681, 685                         | 60, 10     |
| "                                      | 488, 489                         | 60         |
| "                                      | 1701, 1700                       | 50         |
| Sash Lifts                             | 1714, 1716, 1718, 1720           | 50, 10     |
| Storm Window Fasteners                 | 1706, 1706½, 1708                | 50         |
| Window Springs                         | 1696, 1698                       | 40         |
| Camp Stools                            | 1710                             | 50         |
| Back Band Buckles                      | 1730                             | 20         |
| Screws (Standard List), bronzed        | 352, 352C                        | 77½, 10    |
| " bronzed, polished, nickel            | 353, 353C                        | 70         |
| " plated list                          | 352N                             | 75         |
| " nicked                               | 352N                             | 75         |
| " japanned, tinned and gal-<br>vanized | 756, 1352, 1354                  | 82½, 10    |

**Blind Hinges and Fastenings.**

|              |                          |     |
|--------------|--------------------------|-----|
| Blind Hinges | 1600, 1604               |     |
| "            | 1606                     |     |
| "            | 1608, 1612               |     |
| "            | 1616, 1620               |     |
| "            | 1624, 1628               |     |
| "            | 1632, 1634               | Net |
| "            | 1636, 1638               |     |
| "            | 1640, 1360               |     |
| "            | 1644, 1364               |     |
| "            | 1642, 1646               |     |
| "            | 1647½                    | 20  |
| " Hooks      | 1650, 1658               |     |
| "            | 1662, 1666               |     |
| " Fast.      | 1667, 1667½, 16, 1692½   |     |
| "            | 1668, 1672               |     |
| "            | 1674, 1674½, 1676, 1676½ | Net |
| "            | 1680, 1680½, 1380, 1380½ |     |
| "            | 1684, 1684½              |     |
| "            | 1688                     |     |

**Door Check and Spring.**—The Le Clair Mfg. Company, 107 Chambers street, New York, are offering their Pneumatic Door Check and Spring, which is illustrated in another column, at the following prices, subject to a discount of 25 per cent.:

|                              |          |
|------------------------------|----------|
|                              | Per doz. |
| Regular Bronze finish        | \$12.00  |
| Bronze metal, polished       | 36.00    |
| Bronze metal, antique finish | 36.00    |

**Cordage.**—Rope continues in excellent demand and some manufacturers experience difficulty in accumulating stocks. Owing to the strong position and upward tendency of raw material, scarcity of labor and demands for shorter hours at former wages, the market is very firm, with slightly higher prices. Quotations are as follows, on the basis of 7-16-inch and larger: Sisal, according to quality, 9 to 10 cents; Manila, on the same basis, 12 cents per pound. A rebate of ¼ cent per pound is allowed on large lots.

**Binder Twine.**—The comparative small quantity being offered, and the fear of lack of supply sufficient for requirements has caused an eagerness to buy in early harvest sections. Those who have Twine to sell have taken advantage of these conditions, and are asking an advance on the International Harvester Company's schedule of prices. The company have not resumed soliciting business, it is understood, but it is believed by parties who should be well informed in the West, that when the company begin selling again no advance will be asked on the prices they announced on April 1. It is reported that at present prices in the West range from 11½ to 13 cents per pound for Sisal and Standard. Few if any of the Eastern manufacturers are offering any Twine, and they will not accept contracts at any price. The following may serve as a guide regarding possible quotations, f.o.b. Eastern mills, with ¼ cent per pound rebate in carload lots:

|                                  |                |
|----------------------------------|----------------|
| Sisal .....                      | 10¼c. to 11¼c. |
| Standard .....                   | 10¼c. to 11¼c. |
| Standard Manila (550 feet) ..... | 11c.           |
| Manila (600 feet) .....          | 11¾c.          |
| Pure Manila (650 feet) .....     | 12¾c.          |

**Glass.**—A meeting is in progress as we go to press between representatives of the National Window Glass Jobbers' Association and those of the American Window Glass Company. The jobbers are desirous of learning what effect the Glass blowing machines of the company will have on the market in the fall. It is presumed that the company have a stock of Glass which they wish to dispose of to the jobbers in exchange for cash. If the status of the market for the past two or three years may be taken as a criterion, the American Company will continue in control of the market. Quotations of the jobbers' association, for either single or double strength, are as follows:

|                                     |                     |
|-------------------------------------|---------------------|
|                                     | Discount.           |
| From store .....                    | .90 and 10 %        |
| F.o.b. factory, carload lots .....  | .90 and 20 and 2½ % |
| F.o.b. factory, 2000-box lots ..... | .90 and 25 %        |

**Linseed Oil.**—The market remains dull and uninteresting. Demand is light and futures are not indulged in, owing to the uncertainty of the Seed market in the fall and because most of the large buyers have lost money on Oil purchased this year. Very little Oil is being offered, as crushers prefer to limit sales to orders that come to them. City Raw is quoted at 44 cents per gallon in lots of five barrels or more, and out of town Raw at 41 cents in like quantities.

**Spirits Turpentine.**—Demand is moderate, as regular consumers are apparently supplied for immediate requirements. The market is steady at the following quotations, according to quantity: Southern, 49½ to 50 cents; machine made barrels, 50 to 50½ cents per gallon.

## MANAGEMENT OF RETAIL DEPARTMENTS.

**F**ROM a well-known jobbing house, who have also a retail department, we have an inquiry for information in regard to the best methods of conducting such retail departments. Among the points on which advices are desired are the following:

*Into what departments should such retail establishment be divided?*

*What are the qualifications for the man in charge?*

*Should costs be given to any salesman in such department?*

*What are the business relations between the retail and the wholesale department in regard to the supply of goods?*

The subject is of interest to many Hardware houses as there is frequently the combination of both retail and wholesale business under one management. We accordingly invite suggestions from the trade in regard to points which should be borne in mind in this connection, together with information in regard to methods which represent approved practice.

## PRICE-LISTS, CIRCULARS, &c.

**THE HAY-BUDDEN MFG. COMPANY, Brooklyn, N. Y.:** Illustrated pamphlet devoted to Anvils and Ice Tongs. These goods are shown in a variety of patterns. The Ice Tongs have plain points and plain handles, duck bill points and swell handles, also family Tongs. In size the openings are from 10 to 30 inches.

**BERGER BROS., 237 Arch street, Philadelphia, Pa.:** Illustrated catalogue and price-list relating to Tinnerns' and Roofers' Supplies, Eave Gutter and Pipe, Gutter and Pipe Hangers, Hooks and Fasteners, Steel Roofing and Siding, Plain and Corrugated Sheets, Metal Lath, Registers and Ventilators, Valves and Plungers, &c.

**TURNER & DEEGAN, Bristol, Conn.:** Illustrated price-list of Breast Drills, Bit Braces, Screw Drivers, &c.

**THE ROCHESTER CAMERA & SUPPLY COMPANY, Rochester, N. Y.:** Illustrated catalogues devoted to the Poco and Premo Cameras and Accessories. These show and describe the latest developments of the company in the above lines.

**SHIPMAN, BRADT & Co., De Kalb, Ill.:** Illustrated catalogue relating to Low Down, Short Turn, Delivery Wagons. These include Milk, Grocery, Laundry, Bakery, Meat, Hardware, Furniture, Piano and Organ Wagons.

**A. EVERETT & SON, Auburn, N. Y.:** Illustrated price-list of Pattern Letters and Figures, Pew and Door Numbers, Machinery Name Plates, Steel Letters, Figures and Stamps, Copper Brands, &c. The firm have added many new styles and sizes of letters and figures, and carry in stock complete alphabets and sets of figures. They have built a new brass foundry and otherwise increased their facilities.

**GILBERT HUNT COMPANY, Walla Walla, Wash.:** Illustrated catalogue of Threshing Machines, Wind Stackers, Horse-Powers, Wire Cable Pulleys, Hay Forks, Barley Rolls, Barrel Water Tanks, Tank Pumps, &c.

**GLASCOCK BROS. MFG. COMPANY, Muncie, Ind.:** Printed matter devoted to illustrations and descriptions of Baby Jumper and Rocking Chair, Baby Tender and Walker, Invalid Table, Wagon Jack, Poultry Fountain, Washing Machines, Wringers, &c.

**THE DIAMOND SAW & STAMPING WORKS, Buffalo, N. Y.:** Sterling Hack Saw Blades. An attractive folder, the front page of which is in colors, gives calendar for May, shows Hack Saw Blade and Adjustable Frame with prices.

**THE ROCHESTER AUTOMATIC OILER & SUPPLY COMPANY, Rochester, N. J.:** Illustrated catalogue relating to the Rochester Automatic Self Filling Steel Oiler. This is made in straight and bent spout, solid and spring bottom.

**NOVELTY & NOERA MFG. COMPANY, Waterbury, Conn.:** Illustrated catalogue K of bathroom fittings, such as Towel Racks and Bars, Soap Dishes, Hooks, Holders, Match Safes, &c., made of wrought and cast brass, nicked.

**GOLD MEDAL CAMP FURNITURE MFG. COMPANY, Racine, Wis.:** "The Complete Campers' Manual," or, "How to Camp Out and What to Do." This attractive little volume is published in pocket size, making it convenient for the traveler, is profusely illustrated and replete with pertinent suggestions on how to enjoy a camping trip. Articles are given on what should make up the clothing outfit, the quantity and variety of foods to be taken; cooking utensils which will be needed; shelter, tentage, &c.; fires—how to build and use them; camp furniture, cooking receipts, the camp doctor and what to do in case of accidents; packing and transporting, and many other valuable hints. Interspersed throughout the descriptive matter are the numerous articles of camp equipment which the company manufacture.

**P. & F. CORBIN, New Britain, Conn., and 11-15 Murray street, New York,** illustrated catalogue of Duplex 1903 Model New Departure Coaster Hub and Brake, Ramsey Swinging Pedals and a large number of Bicycle and Automobile Parts. The Coaster and Brake is made for both Chain and Chainless Bicycles, Motor Cycles and Tandem Bicycles.

**THE BALDWIN REFRIGERATOR COMPANY, Burlington, Vt.:** Catalogue of nearly 100 pages, illustrating, with prices, the extensive line of metal, porcelain and spruce lined family, grocers', hotel and hospital Refrigerators and Sectional Coolers, of which they are manufacturers.

**THE WRIGHT WIRE COMPANY, formerly the Wright & Colton Wire Company, Palmer, Mass.:** Price-list of Wire Ropes. These include Plow, Steel, Crucible Cast Steel, Iron, Galvanized and Flat Ropes; Towing or Mooring Hawsers, Hoisting Ropes, Suspension Bridge Cables, Ropes for tramways and cable ways for transporting coal, ore, &c.; Ropes for elevators, power transmission, street railroads, mining, logging, standing and running rigging, derricks and dredges; Tiller Ropes, Sash Cords, Clothes Lines, &c.

**THE BOWEN MFG. COMPANY, Auburn, N. Y.:** Bowen Oiling Devices. An illustrated catalogue devoted to these goods shows Oil Cups, Cone Pulley Cups and Tubes, Felt Washers, Oiling Devices for Sewing Machines, Bicycles, Fifth Wheels, &c. The company state that they now make their Plain Compression Grease Cups in steel as well as in brass, and that the steel Cups are much better than those of cast iron in both appearance and strength.



## CONFERENCE BETWEEN JOBBERS AND RETAILERS

**T**HE conference between the officers of the National Hardware Association and those of the National Retail Hardware Dealers' Association, which we announced in our last issue, is in session in Philadelphia as we go to press. An opportunity has thus been given for a frank interchange of views and the consideration of some of the problems which confront the trade as seen from the standpoint of the two great classes represented. The subject of catalogue house competition, the classes of goods they sell, the prices at which they buy and the sources through which they obtain their supplies, is one of the most important which has come before the conference. The difficulties connected with this subject are acknowledged by both of the great interests directly concerned. As we go to press we are without advices that anything definite has been accomplished, but the coming together in an official manner of the retailers and jobbers is regarded as a decided step in advance and the precursor of further conferences, and perhaps the representation of retail interests at the great gatherings of the manufacturers and jobbers.

*From an Official of the Connecticut Association:* I am very glad to see that the retailers and jobbers are getting together as I think that this will be one of the greatest benefits to both classes of the trade, and will make a more friendly feeling between the retailers and jobbers. If we can get the official representatives of the three sections of the Hardware trade—manufacturers, jobbers and retailers—together on a harmonious working basis, the result will be a community of interest that will benefit all parties to a very large extent. I am glad to see that you have brought about such good work, as it has without doubt been through your efforts that the different organizations have come together.

*From a Leading Member of the Indiana Association:* Your editorial regarding semiannual conferences between manufacturers, jobbers and retailers meets with my hearty approval. I have for a long time felt that this had become a necessity, that each party concerned might have light from the viewpoint of the others. To my mind the greatest evil the retailer has to meet is the catalogue house, a competitor of both jobber and retailer. We have all felt the dire influence of catalogue houses on the trade with both farmer and mechanic. This is not by any means the only question for conference between manufacturer, jobber and retailer, but I believe it to be of vital importance to all of us. Should further discussion of this subject make my experiences and observation in the matter of use to you I am willing to give it. Anything to help along the good cause.

*From Fred. Neudorff of the Missouri Association:* I believe one conference between the intelligent element representing the retail Hardware dealers, the jobbers and manufacturers would do more toward clearing away the fog and mists that hover over the minds of those interested than tons of literature and worlds of such wind as we usually get (on the quiet) at State and national meetings of the separate associations. I am so optimistic of the good will and good intuitions of the majority of American jobbers and manufacturers that I believe they would be only too glad to co-operate with us, provided a sensible, solid, basic plan could be evolved, and this is only possible where the elements get together and harmoniously discuss the phases presented, leave out the crank and agitation and do busi-

ness. I have no sympathy with those who advocate syndicate buying, and believe, and have always believed and practiced the policy of living and letting live.

*From an Influential Member of the National Association:* The manufacturer and jobber have always stood together and have often forgot the retailer. He should be counted

### The Retailer Ignored

in in the warfare for trade and the bettering of trade conditions. He is the spy or scout, as it were, and can give to the manufacturer and jobber much information that they cannot get elsewhere. He should be asked to join the copartnership and allowed to do his part. Do not think that he will ever retreat.

*From a Prominent Member of the Minnesota Association:* In the editorial in *The Iron Age* May 7, on representation of retail interests at gatherings of jobbers and manufacturers,

### Conferences Desirable

I think you have struck the keynote to the entire situation. Our success in association work in the Northwest, and especially in Minnesota, has been due largely to just such conferences between our jobbers and the officers of our association. It is a conceded fact by all wide awake retailers that catalogue houses and department stores are here to stay, and any radical measures will only aggravate the situation as regards retailers' interests, but through a proper understanding with manufacturers and jobbers as to the rights of us retailers and by putting catalogue houses and department stores on an equal basis in the purchase and selling of recognized standard goods we can hold our own against them. I am glad to note you brought up this subject for discussion, and I hope the manufacturers' and jobbers' associations will recognize the importance of just such meetings. In certain manufacturers' and jobbers' conferences too little weight has been given the thought that retailers had the ability to discuss and handle this problem with the proper business judgment, but in my opinion, if the opportunity were given them (the retailers) they could show some of the manufacturers and jobbers that their opportunities for observing changing business conditions are more acute and reliable than those of manufacturers and jobbers, as they are continually in close touch with the consuming public.

### The Question of Prices

### Retailers' Ability

## INTERESTS OF THE RETAILER AT LARGE GATHERINGS OF MANUFACTURERS AND JOBBERS.

**N**OTING your editorial on this subject in *The Iron Age* of the 7th of this month, the writer would like to express his approval of it, and in doing so believe he expresses the opinion of the larger and better class of retail Hardware merchants throughout the country.

There is much to be said in favor of a gathering of the three interests, for the betterment of all, or for the admission of the retailer, or retail association representatives, at least to an occasional annual meeting of one or both of the above interests.

### Manufacturers' Relations with Retail Trade.

One point brought out, and one of the best, is that it is an extremely hard matter for any manufacturer to know whether or not those larger retailers whom it would be his desire to reach and sell, through the jobber, are being so reached and taken care of, even though the maker of the goods may have a list of retailers reached by each jobber selling his goods in many cases with a word of explanation or a few suggestions. The bars might be taken down, the trade more than materially increased and the flitting from line to line, which is so objectionable, entirely avoided. It is hard for the average retailer to reach headquarters, and the time and inclination are not always with him so to do. He feels, too, that if he cannot get satisfaction from his jobber he is not likely to get it by going to the maker. There is no one thing so oils the wheels of all classes and so

easily drives away any friction as the bringing them together in

#### Personal Contact.

There is a feeling of recognition in the contact of men so brought together that allows of untangling and smoothing the ways, not equaled by days and weeks of typewritten letters and correspondence.

More than all this, there is the satisfaction that comes to all three of the classes in the knowing of men from whom you are buying, of men to whom they are selling. The grasp of the hand, the being able to say: "I have bought and sold your goods for the past so many years and expect to continue buying them." The writer remembers the kindly way in which he was met as a retailer by the senior member of one of New York's largest manufacturing concerns but a few years since, and at your Hardware club, with the expression, "I wish it was possible to bring our trade right here once a year, that we might meet and know them; marketing everything as we do through the jobbers, we know none of them as we should."

#### Manufacturers Should Know the Retailers

The manufacturer makes it a great point to know personally every jobber selling his lines, for the reason that he is absolutely dependent on them for the distribution of his goods and personal knowledge is almost a necessity. To my mind the argument is much stronger that he should as nearly as possible know the retailer. The time comes when the jobber changes his lines, and in changing seeks to have his every customer in the retail trade; also make new affiliations. Or, *vice versa*, the customer thinks of changing his line, and it is up to the jobber to try to prevent it. It is here that the coming together of the classes is a large influence in cementing long friendships for certain lines of goods.

#### Considering Retail Interests.

We cannot see why, as the occasion offers, the retailer might not be called in with jobber and manufacturer to their meetings for adjustment of prices of differentials, as between maker and merchants of quantity, discounts, &c. These matters are largely brought about through representatives from the various associations of both classes, and while it has never been a matter of suggestion or discussion among members of the State or National Retail Association, I believe no one thing would be more conducive of good results than the bringing into matters of this class a representation from either the National or several State associations.

#### Advantage of Consulting Retail Trade.

The knowledge among the better class of retailers that they were interested to the extent of having been asked to help decide these things would practically settle it with them so long as this or that arrangement held, making in the end less trouble for the jobber in his selling—less attempting to go direct to the manufacturer by the larger retailer and less friction generally.

The paths of trade are rough enough as it is, and anything that will tend toward the smoothing of them will be a blessing. Witness what is constantly being done, and so easily done, through the medium of the many State retail associations along this line.

#### Catalogue House Competition.

The time is at hand when the retailer needs and must have the help of both jobber and manufacturer in his contention with the catalogue house, and when the maker and jobber, if they stand on stable ground, must have, too, the aid of the retailer to reach the results sought. Water cannot long be carried on both shoulders by makers of reliable goods, and it is up to the jobber and retailer to say to whom such classes of goods may be sold.

#### Caliber of Retail Representatives.

There are men in all the associations of the country fitted to cope with these and other questions bearing on the good of the trade. Indeed it is a wonder what men the retail associations of the past few years have brought forth—brainy, broad, clever business men, able to cope with any class in trade or finance. All questions that are closest at heart to the retailer should interest most the jobber and manufacturer, and if that interest is felt as

it should be it will result eventually in the bringing of them together. It is an assured fact that their joint interests in joint discussion can bring naught to them and to the trade at large but good.

We trust the time is not far distant when they will be welcomed in council in all things in which their interests are mutual.

H. C. W.

## RELATIONS BETWEEN JOBBERS, MANUFACTURERS AND RETAILERS.

BY A PENNSYLVANIAN.

IN your issue of May 7 there appears a matter of common interest to the manufacturer, the jobber and the retailer of Hardware. To take a retrospective view, we find that within the memory of at least a few dealers there was a time when the Hardware jobber strenuously objected to the manufacturer placing the maker's name on the package of goods—showing how the jobber dominated the trade in those days. And he still dominates it in a sense, and it is right that he should, for after all the jobber furnishes the best channel for the distribution of the maker's product, to the retailer, who is still recognized as the legitimate channel for getting the manufacturer's goods into the customer's hands—provided, however, that the jobber confines his trade to the legitimate channel, by selling the retailer, and fully realizes that he should not come into competition with him by trying to sell the manufacturer, the catalogue or mail order house or the consumer. For if the retail Hardware dealer is alert and well equipped to attain the possibilities within his reach and to work and act well his part as a distributor (that does distribute), we are quite sure that his field of work is still a large one, and it should not be a barren field either.

#### COMMUNITY OF INTERESTS.

The logical conclusion of all conferences between the manufacturer and the jobber has been to act in harmony and in every way possible avoid any conflict of interests in their marketing of goods. This has been the policy of both, and still is. Now inasmuch as the majority of the manufacturer's products of iron and steel are distributed through the various channels covered by the Hardware and metal dealers, and these interests have without doubt formed a very material part of the wonderful development of American manufactures and incidentally American foreign and home trade, with interests so large, covered by the manufacturer, the jobber and the retailer, should there not be a community of interests somewhere?

The leading trunk lines of American railroads have reached about such a conclusion of late years and have found it to be good business policy. The spirit of fraternity and toleration for the rights and opinions of others that is doing so much these days in making smooth the paths of trade should continue all along the Hardware line until joint sessions be held, consisting of representatives from the American Hardware Manufacturers' Association, the National Hardware Jobbers' Association and the National Retail Hardware Dealers' Association, and these meetings should be held at stated intervals for the consideration of matters of mutual interest. Times change and men change with the times, and the quicker manufacturers, jobbers and retailers realize that their interests are to a very great extent common interests then will it be better for all. If the legitimate Hardware jobber of the larger cities and trade centers does not yet realize that the methods of the catalogue houses and the methods of some of the jobbers, especially in the smaller towns, are fast getting to be a dangerous proposition for him to consider, he will certainly soon realize that fact, and also the additional fact that the remedy lies entirely with the manufacturer and the legitimate jobber.

#### THE RETAILER KNOWS.

Now there can be no question that the up to date and progressive retail Hardware dealer is in constant touch with the market, and knows that the evils and abuses referred to are fast becoming intolerable, and knows also that unless prompt and decisive action be taken the end



will soon become overpowering. The alert retailer knows the rank injustice done to legitimate trade far better than either the manufacturer or the jobber can know and is often able to produce evidences that have helped some of the largest Hardware manufacturers to realize the mistakes they have made in selling catalogue and mail order houses in the wide open manner, so that these manufacturers have cut out that class of trade. More of them will understand this sooner or later if the Hardware jobbers' association and the retail Hardware dealers' association realize the danger that they are in and perform their duty as they should. For when immense catalogue house interests with millions of money behind them are openly charged with maintaining a lobby at Washington so as to influence legislation in their interests, and within a few months one of the departments of our Government found it necessary to turn the searchlight of official inquiry onto the secret methods of the catalogue or mail order houses, whereby they have used the Post Office Department to procure lists of all the patrons of the rural delivery routes, if they can do this with the United States Government and also use like methods with agents of railroad companies and express lines for the distribution of their catalogues and their wares, what will they do if they succeed some day in getting the Parcels Post bill passed?

#### ARE NOT THE TIMES RIPE

for a joint conference of manufacturers, jobbers and retailers to discuss these important matters in all their bearings, and as viewed from their several standpoints? We believe the manufacturers and the jobbers have much to gain by taking representative retail Hardware dealers into their confidence. The way for arriving at systematic and energetic work that will accrue to the benefit of the three branches of trade seems to be becoming clearer each year, and it seems as though the time is here for the manufacturers and the jobbers, at their meetings, to consider matters other than those of determining discounts, classifying lists and establishing classes and grades of jobbers and weighing their respective advantages and disadvantages; that they must also take up measures for general trade interests not heretofore considered in their meetings and yet in the common welfare of both. We are quite sure that the retail Hardware dealers can show both the jobber and the manufacturer several things not dreamed of in their philosophy. Heretofore there has been no way to get all these interests together, but if efforts are made to give the National Retail Hardware Dealers' Association's representatives an invitation to attend such conferences and a chance to be heard, we feel that they can help some. Yes, help in more ways than one. If the standard quality of goods is to be maintained it can only be done when they are sold by the regular retail dealer, who in the past has been considered as the last proposition, when in fact he is the first lever toward keeping the mill grinding for both the manufacturer and the jobber.

#### NEED OF A RALLY.

I am sincere in believing that you have touched a chord that will vibrate in harmony throughout the trade and from it will come a call to rally all the interest possible in these three branches and act in unison in outlining a policy that will be fair and just to all and help maintain the high standard of excellence of the American Hardware manufacturer's products for the benefit of all concerned, including, of course, the consumer, who even now is suffering (and suffering, if reports be true, without redress) from the mail order business, by his having ordered and received goods in which the manufacturer was tempted by the specifications of the immense order from outside the regular channel of the Hardware trade to lower his standard of quality when he lowered his regular jobbing price.

The necessity of a series of conferences concerning graver questions and broader concerns of vital interest to the Hardware trade is, to use the language of a former President, "an actual condition that confronts us and not a theory."

BUTLER BROS., 495-497 Broadway, New York, are sending to the trade a 14-page pamphlet of Fourth of July

Goods, illustrating a large and complete line, both of solid quantities and assortments of Fireworks. All goods on the first nine pages they ship from their Rochester, N. Y., warehouse, the remainder going from the New York house.

### WASHINGTON HARDWARE ASSOCIATION.

THE WASHINGTON HARDWARE ASSOCIATION have issued a very interesting pamphlet devoted to the welfare of the organization, which was formed in 1900 "to harmonize the Hardware interests of the State of Washington." The pamphlet opens with a brief history of the State of Washington, which is followed by a summary of the varied and extensive resources of the State. The following paragraph tells the story of the organization of the association:

On April 19, 1900, George Boole of the Schwabacher Hardware Company of Seattle called together the Hardware dealers of Western Washington for the purpose of organizing a Hardware Dealers' Association. Always a keen student of the political and trade conditions, he realized the importance of organization to successfully cope with the problems that meet the Hardware trade. He noted the far-reaching effects of rate wars, saw the conflict between retailers and manufacturers, the disastrous effects on regular trade of competition with catalogue houses and department stores; and he realized that only by co-operation could the Hardware dealers be in a position to stand against such adverse conditions and gain power to make their own terms with Eastern trade.

The pamphlet gives the constitution and by-laws, which were adopted at this meeting and are still in force. Following are summaries of the work done at the different annual meetings of the association, whose next convention will be held in Whatcom, November 11 and 12 next. A midsummer meeting will also be held in June. The pamphlet closes with an appeal to nonaffiliated merchants to join in the work of the association, any information concerning which will be cheerfully furnished by the secretary, Walter M. Olive of Mission.

### HARDWARE JOBBERS' PURCHASING CO.

THE HARDWARE JOBBERS' PURCHASING COMPANY have recently taken quarters in the new Irving Bank Building, Chambers street and West Broadway, which are better suited to their purposes than those occupied at 102 Chambers street. This company have been organized a little over a year, and are now under contract with a number of Hardware concerns to do their buying on a salary basis. The action of the older syndicate buyers in turning down some of their former connections to meet the views of the National Hardware Association has doubtless made easier the establishment of a new Hardware purchasing organization, as this particular house have already taken over four or five desirable concerns who had formerly been represented by the older syndicate buyers. The Hardware Jobbers' Purchasing Company now buy for about 50 distinct concerns, 15 of which have been contracted with in the last two months. They have also renewed yearly contracts with a number whose first year had about expired, which they direct attention to as proof of satisfactory service after a year's existence.

E. S. Cox, the vice-president, was with R. K. Carter for 12 years, and Francis Van Wyck, secretary, was 24 years with the same house, a large proportion of the time as buyer. S. Doblin, treasurer, was for 15 years with the Biddle Purchasing Company. One of the Hardware concerns of an important State, whose business they have taken over, is said to do a business of \$750,000 a year, distributed between their retail and wholesale business, a volume of trade not always reached by houses which are classed as jobbers. The Hardware Jobbers' Purchasing Company are apparently building up a connection with jobbing Hardware houses without special regard to the proportion of wholesale and retail output, their aim being to represent substantial Hardware concerns who will take a good volume of goods without exclusive reference to the method in which they are distributed.

## HARDWARE FACTORY COST METHODS.

**T**HE necessity for taking into account all the elements of cost is recognized by manufacturers, but there are many practical difficulties in the way of charging up such costs against any given article or line. Some of the questions connected with this general subject are touched upon in the following letters, which are from representative manufacturers, whose names, if given, would add weight to their suggestions and views:

### THE DISTRIBUTION OF NON-PRODUCTIVE COST.

*From a Massachusetts Manufacturer:*

This matter of the apportionment of general expenses is a peculiar one, the writer is of the opinion that no fixed rule can be laid down and followed; in theory this might work well, in practice, unless possibly upon certain lines where profits are universally large, we do not believe it would be at all practical. Almost every manufacturer makes and sells certain things which do not net him much if any profit—that is, when you take as a part of their manufacturing cost the proportionate share of the general expenses; on the other hand, perhaps these articles can be produced without in any way increasing the general expenses of a factory and they may help to sell other goods upon which profits are better.

For our general information we have a certain fixed rule, by which we arrive at shop costs for purposes of average, &c., but we only use it as a matter of comparison and for general information, keeping in close touch with the actual sales of different articles, and judging therefrom whether or no our general averages are to be profitable.

*From a Manufacturer in Ohio:*

It is easy to determine the cost for labor actually employed in producing the goods. Aside from that, there are other expenses which are unavoidable, but which vary from year to year, just as the amount of sales varies.

**Elements of Cost** The items of salary, rents, taxes, postage, telegrams, telephones, traveling expenses, stationery, advertising, teamsters, warehouse men, yard men, engineer, firemen, men about the shop who carry material and do various odd jobs, but who do not work on machines, the cost for boiler and forge fuel, water, and a great number of additional incidental expenses that are unavoidable—all these practically add to the cost of the goods. They must be paid for, and the percentage of the aggregate of these to the total sales should be added to the goods after cost has been figured on a basis of taking material, fuel, actual shop labor and such other incidentals as lubricating oil, belting, &c.

It is better to estimate the cost of goods a little higher rather than to underestimate it, because at the end of the year, when taking inventory, it is easy to make an arbitrary reduction of any percentage, from the total of the inventory, while a showing of a little higher than actual cost throughout the year, when considering prices at which to sell the goods, is all in favor of the seller.

**Distribution of General Expenses** It is well known that all goods made in any one factory, or handled by any merchant, do not pay the same percentage of profit, and yet sometimes the articles which pay the smaller percentage may be the most profitable to make in one sense, and the percentage to be added, as above mentioned, should be borne by such articles as well as by those which pay a large profit. It is always best not to cheat one's self by showing too low a cost during the 12 months when one is selling the product, when if the cost is a little high at the one day of the year when inventory is figured, it is a very easy matter to make some arbitrary

reduction, rather than to show too large a profit and then to disappoint one's self when dividend day comes.

*From a Manufacturer in Pennsylvania:*

In regard to the principle on which fixed charges or general expenses should be apportioned among the products of the plant, we would say: Our method has been to find by past experience what percentage these fixed charges or general expenses would bear to the total cost of actual production of the factory (not the selling prices, please note, but the cost), and under the heading "Factory Burden" to add such percentage, as is shown, necessary to cover it, to the figured cost of each article. I know that in a line of great variety this would probably not result in absolutely accurate costs, as some articles might require less of this general expense than other goods, but if we attempt to trace out the exact percentage which should be chargeable to each article it would be an interminable and very expensive proposition, and I do not think we could then get it absolutely correct. In making our costs we take piece work prices for various operations on a piece work basis, day work costs from records which we have of operations on a day work basis, and for our miscellaneous labor we take percentage of the entire pay roll, and make each article carry its percentage, the same as we make each article carry its percentage of general expenses. We include in our general expenses all higher replacements or betterments of patterns, dies, tools, &c., and our experience shows that this is entirely necessary, as if it is not done an entirely fictitious value is finally found to exist in connection with patterns, dies, tools, &c. &c.

### COST OF DOING BUSINESS SCIENCE OF BUSINESS.

Cost of doing business should be called the "Science of Business," and all business men are now waiting for a Moses who will deliver to them the laws governing this science. We have a Science of Farming taught in schools supported by the taxpayers, and we also have a department of the National Government devoted to Agriculture. We have a great number of schools devoted to the Science of Mechanics, the Science of Mining and the Science of Finance, but none to teach the Science of Business. The National Hardware Association of Jobbers and the National Foundrymen's Association have done a great work with their own people in pointing out the fact that but very few know the cost of doing business or how to arrive at it.

#### A Subject for Study

I would like to lay down the following propositions as suggestions for the discussion of this subject:

I. The establishing and promulgating certain basic principles and rules for the determination of cost of producing and marketing goods.

II. The fidelity with which these principles and rules are observed shall be a large factor in determining the credit rating.

III. Goods in good condition shall not be sold at less than cost.

IV. In case of a business failure when it can be proven that the goods were sold at less than cost as determined by these principles and rules, the members of the firm or officers of the company shall be individually liable for the debts of the company and to criminal prosecution.

These principles and rules could be made comprehensive enough to cure the trust evils, and as we are sure to have legislation on the subject, I submit that it would be wiser to have a convention of representative business men, who might adopt this new creed instead of waiting for legislation, which may be harmful.

### A COMPREHENSIVE RECORD OF COSTS.

The system employed for keeping track of costs by prominent New England manufacturers in whose factory most of the operations are done by piece work,



includes the employment of a large book, especially ruled in the style shown in the accompanying illustration, the lines being about 1/2 inch apart. In the space to the left on the horizontal lines are placed the names and sizes of each article manufactured, one line being used for each article. The headings for the vertical columns consist of one for each of the operations of labor employed and one for each of the following items:

- Total Labor.
- Labor Plus Percentage for General Expenses.
- Cost of Material.
- Cost per Hundred.
- Cost per Dozen.

The sums put in the several headings of the operations of labor are either the actual piece work or the average cost of doing the work by time work. Under the heading "Total Labor" is given the total of the amounts placed in the previous column. In the next column, "Labor Plus Percentage," is placed the amount in the previous column plus a percentage for the general expenses. The cost of the material is computed and put in the next column. The last two columns are used to show the

If one of your number does not practice this rule, you will endeavor to remedy it.

"We also request that in case of emergency you will agree to work an additional hour at the same rate of compensation."

### DUNHAM, CARRIGAN & HAYDEN COMPANY'S NEW CATALOGUE.

DUNHAM, CARRIGAN & HAYDEN COMPANY, San Francisco, Cal., and 127 Duane street, New York, have just issued the largest and most complete illustrated descriptive catalogue, No. 20, in the history of their business, which was established in 1849 and incorporated in 1888. There are 1431 pages, each 11 3/4 x 9 inches, bound in heavy beveled board covers, canvas covered. Three front pages contain 12 engravings of their store and warehouses on the Pacific Coast, together with views of the interior of the store, which is divided into 14 departments. The departments handle wide assortments of Hardware, both of domestic and foreign production. Among the goods they deal in are Iron, Steel, Metals,

|          | Labor Operation #1. | Labor Operation #2. | Labor Operation #3. | Labor Operation #4. | Labor Operation #5. | Labor Operation #6. | Labor Operation #7. | Labor Operation #8. | Labor Operation #9. | Labor Operation #10. | Labor Operation #11. | Labor Operation #12. | Total Labor. | Labor + Percentage. | Material Operation #1. | Material Operation #2. | Material Operation #3. | Total Cost. | Cost per 100. | Cost per doz. |
|----------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|--------------|---------------------|------------------------|------------------------|------------------------|-------------|---------------|---------------|
| Goods A. | 0112                | 0002                | 0012                | 0021                | 0015                | 0070                | 0093                | 0031                | 0110                | 0111                 | 0013                 | 0003                 | 0072         | 1008                | 0149                   | 0003                   | 0152                   | 1338        | 13.38         | 160           |
|          | 0112                | 0002                | 0012                | 0021                | 0015                | 0070                | 0093                | 0031                | 0110                | 0111                 | 0013                 | 0003                 | 0072         | 1008                | 0149                   | 0003                   | 0152                   | 1338        | 13.38         | 160           |
| Goods B. | 0112                | 0002                | 0012                | 0021                | 0015                | 0070                | 0093                | 0031                | 0110                | 0111                 | 0013                 | 0003                 | 0072         | 1008                | 0149                   | 0003                   | 0152                   | 1338        | 13.38         | 160           |
|          | 0112                | 0002                | 0012                | 0021                | 0015                | 0070                | 0093                | 0031                | 0110                | 0111                 | 0013                 | 0003                 | 0072         | 1008                | 0149                   | 0003                   | 0152                   | 1338        | 13.38         | 160           |
| Goods C. | 0112                | 0002                | 0012                | 0021                | 0015                | 0070                | 0093                | 0031                | 0110                | 0111                 | 0013                 | 0003                 | 0072         | 1008                | 0149                   | 0003                   | 0152                   | 1338        | 13.38         | 160           |
|          | 0112                | 0002                | 0012                | 0021                | 0015                | 0070                | 0093                | 0031                | 0110                | 0111                 | 0013                 | 0003                 | 0072         | 1008                | 0149                   | 0003                   | 0152                   | 1338        | 13.38         | 160           |
| Total    | 0112                | 0002                | 0012                | 0021                | 0015                | 0070                | 0093                | 0031                | 0110                | 0111                 | 0013                 | 0003                 | 0072         | 1008                | 0149                   | 0003                   | 0152                   | 1338        | 13.38         | 160           |
|          | 0112                | 0002                | 0012                | 0021                | 0015                | 0070                | 0093                | 0031                | 0110                | 0111                 | 0013                 | 0003                 | 0072         | 1008                | 0149                   | 0003                   | 0152                   | 1338        | 13.38         | 160           |

Comparative Record of Costs at Intervals.

cost per hundred and cost per dozen of the finished article.

An interesting feature of this system as used is that when the first records are made the cost of each article is filled in at the bottom of each square in small figures. At the next time when the costs are figured the new amounts are placed directly over these, but in a different colored ink. When the costs are again figured the figures are placed above these and a different colored ink is used, so that one page of the record book can serve for four or five successive computations. The advantage of this arrangement as facilitating a careful scrutiny of costs from time to time is obvious.

### A NINE-HOUR DAY.

THE SMITH & EGGE MFG. COMPANY, manufacturers of Hardware Specialties, Bridgeport, Conn., have granted their employees a nine-hour day without reduction in pay. The company's action came on the seventy-fourth anniversary of the birth of F. W. Smith, president and principal owner of the business, and the posting of the notice was in celebration of the event, a fact which the 200 employees fully appreciated. The notice was as follows:

"Believing as we do that a manufacturing business can be conducted more pleasantly and more profitably where friendly relations exist between the employers and employees, we have decided to grant the request that you recently made of us, and on and after June 1, 1903, the hours of a day's labor will be nine, instead of ten as heretofore, without reduction in wages. While a few others have done this, you are probably aware that it is far from being universal.

"Believing as we do that you can do nearly, if not quite the same work in nine hours, we trust to your loyalty and the interest which we hope you take in our business, to bring about such a result. We have a request to make of you—that is, that you will give us nine clean hours of labor, being at your post when the whistle blows, ready to go to work, and that you will continue to work before washing up until the signal of the whistle is again given, and you will carry this rule out among yourselves.

Pipe and Fittings, Heavy and Shelf Hardware, Cutlery, Fishing Tackle, Sporting and House Furnishing Goods, Bicycles and Sundries, Mill, Mining, Railroad, Water Works and Electrical Supplies, Agricultural Tools, Builders' Hardware, Sewing Machines, &c.

### NOVELTY & NOERA MFG. COMPANY.

THE NOVELTY & NOERA MFG. COMPANY, Waterbury, Conn., is the name of a new business organization, comprising the Novelty Mfg. Company and Noera Mfg. Company. The new interest will be represented by John H. Graham & Co., 113 Chambers street, New York, as direct sales representatives. Additional buildings give the company over 10,000 square feet more of floor space for storage and shipping purposes, and the office is also being enlarged. The officers of the company are Thomas Fitzsimons, president; Frank P. Noera, treasurer, and Louis E. Fitzsimons, secretary, all of whom were formerly with the combining companies. In a general way they manufacture Bathroom Fittings, Upholsterers' and Cabinet Hardware, Oilers' and Engineers' Sets, Bicycle Sundries, Cutlery Trimmings, Smoking Pipe Ferrules and Mountings, Umbrella Ornaments and Small Metal Goods of kindred character.

### THE L. & I. J. WHITE COMPANY.

THE L. & I. J. WHITE COMPANY, Buffalo, N. Y., have issued a new catalogue and price-list of their Edge Tools, Machine Knives, &c. The frontispiece is a portrait of the late Leonard White, first president of the company. A view is also presented of their extensive plant. In the address to the trade attention is called to the fact that their Edge Tools and Machine Knives have been manufactured for nearly three-quarters of a century and have achieved a high reputation for quality. The catalogue illustrates a new style of Butt Chisel, Nos. 11A and 11B, the latter with bevel edge. The Tool is of solid cast steel, and 9 inches long over all. It is intended for use in fitting in butts when hanging doors.

## THE TRAVELING SALESMAN HIS METHODS AND CONTROL

BY SAMUEL MASTERS.

### CHAPTER XVIII.—KEEPING THE SALESMEN TO THE MARK.

**T**HIS feature of the work of managing salesmen is of extreme importance, and to produce the best results requires no mean amount of ability. It cannot be done except by a man who has the faculty of leadership, is possessed of patience and has an appreciation of and sympathy for the troubles of the men on the road.

#### Interests Always Identical.

The wise manager of salesmen knows that the men are as anxious to succeed as he is to have them do so, and is slow to blame and quick to encourage. "Our interests are identical," he says in effect. "If we are to succeed, you must do so, and hence we will do all in our power to support you. If anything hampers you, tell us all about it and we will make your path smooth if possible. Keep us informed regarding anything that affects your ability to sell goods. We know you will do your best at all times, and will be as pleased as you to see a big business done."

He finds that a spirit of helpful interest is better than that of a judge, and that he can draw his men on to increased effort by encouragement when he could do nothing by attempting to drive them.

#### Value of Comparisons.

One valuable method of spurring the salesmen to renewed effort is by issuing at intervals a statement showing the quantity sold by each man of leaders among seasonable goods, such as, for instance, Ice Cream Freezers, Refrigerators, Lawn Mowers, Steel Goods, Screen Doors, &c. At the beginning of the season a dozen such articles can be selected, the salesmen's orders for the previous season gone through and the quantities sold computed and the figures given the salesmen, somewhat after this fashion:

#### Summer Goods.

"We want this year to sell a larger amount of goods of this class than ever before. Last year you did well—some of you much better than others—and we are confident that upon many of the routes the quantities under each heading can be greatly increased. For the sake of comparison, and that you may know what you have to do to beat your last year's record, we give below the totals of last year's business done by each salesman:"

|                | Ice Cream<br>Freezers.<br>Each. | Refriger-<br>ators.<br>Each. | Steel<br>Goods.<br>Dozen. | Lawn<br>Mowers.<br>Each. | Screen<br>Doors.<br>Dozen. |
|----------------|---------------------------------|------------------------------|---------------------------|--------------------------|----------------------------|
| Abell .....    | 30                              | 9                            | 55                        | 100                      | 70                         |
| Hanna .....    | ..                              | 1                            | ..                        | 3                        | ..                         |
| Beekman .....  | \$1                             | 40                           | 201                       | 50                       | 63                         |
| Randall .....  | 250                             | 102                          | 156                       | 80                       | 120                        |
| Douglass ..... | 17                              | 16                           | 40                        | 26                       | 12                         |

#### Personal Letters Accompany Statements.

With this list a letter should go to the men who it is evident have paid no attention to the lines, exhorting them to push for business, telling them that monthly statements will be issued showing the status of things and expressing confidence in their ability to make a good showing if they will try. The manager can be certain that this statement will be carefully studied and that every man worthy of a route will make a sincere attempt to keep up his end and have a decent showing among his fellows. If he makes no attempt to sell the goods it will be noted at once and he can be called to account gently at first by calling attention to the way in which the records show that he is neglecting the goods; then if this fails, he can be brought sharply to task—but this only as a last resort.

#### Monthly Comparisons on Leaders.

It is a good thing to carry a system of comparison of this kind through the entire year, changing the lines with the varying seasons. It will stimulate the good men to try to stand at the top and incite others to do all they can.

#### Bonuses as Incentives.

Another way in which men are urged to do their best is by the offer of bonuses for the greatest amount of goods sold in a year in certain lines, such as Cutlery and Sporting Goods, which pay a fancy profit. Comparisons of sales of these goods published regularly will lend an interest to the contest and excite those in the lead to do their very best. A \$100 prize is well worth working for, and the jobber will gain increased sales that will make it a good investment.

#### Manufacturers' Bonuses.

Manufacturers are coming to recognize the value of the bonuses as a sales stimulant, and in a number of instances authorize the leading jobbers to offer such a prize to the salesman in their employ who sells the greatest quantity of goods of their manufacture. With the prizes which the jobber himself offers and those which the manufacturers make through him, the salesman of the large houses has usually a dozen such prizes before him as an incentive, besides the pleasurable sensation of leading his mates and the increased reward in the way of his percentage of profit on these lines which pay well.

#### Bringing Up the Laggards.

Salesmen have a fashion of pushing some goods and completely ignoring others. On one route in the writer's experience, the salesman would sell Axes and Cross Cut Saws for future delivery, but could not be induced to touch any other articles except for prompt shipment—and could make no sort of an explanation for not doing so. Here and there a man whose sales run large on one line will fail utterly on another. These comparisons enable the manager to tell at a glance just which of the men needs to be brought to with a turn, and with the evidence of the success of the others before him the man who is behind can hardly claim that it is unjust to require him to improve.

Another comparison of value is that of gross sales and percentage of profit. It may not be wise to publish figures, indeed it is usually unwise to do so, but the record can be made by numbering the salesmen first, second third, &c., in their order as shown by greatest sales and greatest profit. This proves a corrective measure for the man who makes gross sales his aim rather than profit, and often proves that the conscientious man on a poor route is worth more to the house, relatively, than his more showy brother with larger opportunities.

### REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

*REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses:*

FROM PICKENS, DISS & SMITH HARDWARE COMPANY, Marysville, Mo., who have lately been incorporated with a capital of \$10,000. Their line comprises Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Paints and Oils, Sporting Goods and Furnaces. The company are successors to D. T. Garrett Hardware Company.

FROM W. VAN FOSSIN, who has succeeded Allen & Stein in the Hardware, Stove, Agricultural Implement and Sporting Goods business at Reswick, Iowa.

FROM M. G. ELSEVER, who succeeds Lewis & Elsever in the Hardware, Stove and Sporting Goods business at Pocahontas, Iowa.

FROM STEVENS & VALLANCE, who have bought out Stevens, Bacon & Co., at Geneseo, N. Y., dealers in Shelf and Heavy Hardware, Stoves and Furnaces, Agricultural Implements, Paints and Oils, Sporting Goods, also plumbing, hot water and steam heating, &c.

FROM HENDERSON & HAYWARD BROS., Sterling, Col., who have succeeded Geo. A. Henderson in the sale of Hardware (Shelf and Heavy), Stoves, Tinware, Agricul-



tural Implements, Sporting Goods, Harness, Saddles, Plumbing Supplies, &c.

FROM CRUZE-STERLING COMPANY, Knoxville, Tenn., who are just opening up in business as dealers in Builders' Hardware, Glass, Paints, &c.

FROM HARDWARE SUPPLY COMPANY, Quincy, Mass., who handle a general line of Hardware.

## NEW ENGLAND HARDWARE DEALERS' ASSOCIATION.

THE monthly meeting and dinner of the New England Hardware Dealers' Association was held at the United States Hotel, Boston, on Wednesday, May 13. President John H. Sayward presiding. About 40 members were present. After the dinner, which was served at 6 o'clock, a business meeting was held, and members were invited to join in the discussion of the subject: "How to Avoid Bad Debts, and What Plans Can Be Adopted That Will Benefit Us All and Make Our Association Stronger?" Messrs. Sayward, Tarbox, Burditt, Adams, Saunders, Thompson, Nichols and others took part in the discussion.

### How to Avoid Bad Debts.

In regard to the question of bad debts the first speaker said briefly that he knew of only two sure remedies: first, to settle for cash only, and second, to have the dead beats buy of the other fellow.

Mr. Tarbox suggested that Hardware dealers should have less hesitation in making inquiries of credit purchasers as to their ability to pay promptly. A definite agreement should be made with them to pay upon a certain date. A note should then be taken and should not be extended, except with collateral with the deposit. Another good rule to bear in mind, said the speaker, is not to sell a man \$100 worth of goods when you would not lend him 75 per cent. in cash.

Mr. Adams thought that the effective way to avoid bad debts was for Hardware dealers to show their confidence in each other in the form of strong local associations. Dealers should consult with each other constantly in a fair minded way and especially in regard to the credit of prospective customers. The idea holds good for small communities as well as for large.

Mr. Thompson thought that the contractors were the chief offenders. He recommended strict measures in dealing with this class both before and after sales.

Mr. Nichols spoke of the Building Trades' Agency Company, which, he said, furnish reliable credit information to merchants in regard to contractors and others in the building trades.

### Strengthening the Association.

In regard to the second part of the subject before the meeting for discussion: "What Plans Can be Adopted That Will Benefit Us All and Make Our Association Stronger?" President Sayward read some letters that he had received from secretaries of other associations. The letters were in reply to inquiries sent to these gentlemen by the president.

The substance of the letter of M. L. Corey, Argos, Ind., secretary of the National Retail Hardware Dealers' Association, was that the problems before the retail Hardware dealers were never so great as at present; that mail order competition, which has become so firmly established in the West, will soon penetrate to every corner of the country; that manufacturers are marketing their goods direct more and more; that retail Hardware dealers individually do not seem to properly appreciate the true conditions and dangers that confront them, and that the only remedy is to unite and stand together and by each other in the form of vigorous organizations.

The secretary of a Western association with 524 members wrote that his association was so strong that jobbers and manufacturers have to give them active as well as moral support in all movements. Even a small complaint in regard to some manufacturer or jobber did not fail to bring forth an explanation from the offending jobber or manufacturer. The strength of the association made it

difficult for department stores and catalogue houses to obtain certain lines of goods. Another important feature was their insurance system, which saved money for every member of the association.

The secretary of the Connecticut Retail Hardware Dealers' Association wrote that their monthly conferences on prices had been very successful in preventing the cutting of prices. Not the least of the many good results of the association were the good fellowship and friendliness that it fostered.

It was voted that the letters be referred to the President for such action as he deemed advisable.

### Selling Prices on Staples.

At the last meeting it was voted to send to each member a printed slip with request for information as to his selling prices on certain staples. The slip was as follows:

BOSTON, MASS., May 13, 1903.

Gentlemen: Will you please mark your present selling price on goods indicated below. Kindly return the paper, without signature or location, to

JAMES A. FARLESS, Secretary, 41 West Newton street.

|  |       |
|--|-------|
| Nails, Wire, Base, per keg.....            | ..... |
| Nails, Cut, Base, per keg.....             | ..... |
| Nails, Wire, retail, per pound.....        | ..... |
| Nails, Cut, retail, per pound.....         | ..... |
| Zinc, whole sheet, per pound.....          | ..... |
| Zinc, cut sheet, per pound.....            | ..... |
| Flat Head Iron Screws, discount.....       | ..... |
| Rope, common size, per pound.....          | ..... |
| Window Weights, per pound.....             | ..... |
| Poultry Netting, per foot by the roll..... | ..... |
| Sheet Lead, per pound.....                 | ..... |
| Wire Cloth, per foot.....                  | ..... |
| Sash Cord, braided cotton, per pound.....  | ..... |
| Galvanized Conductors, per foot.....       | ..... |

The Secretary read some of the returns, and remarked that they showed a good uniformity of prices.

George C. Gilbert of the New Jersey Wire Cloth Company, Trenton, N. J., was elected to membership.

President Sayward appointed the following as members of the Entertainment Committee for the October meeting: Frank M. Smith, Boston; J. Carlton Nichols, Boston; E. M. Richardson, Waltham. For the December meeting, which will be Ladies' Night, he appointed Samuel H. Thompson, Lowell; M. H. Tarbox, Boston; James A. Farless, Boston.

## TRADE ITEMS.

THE building which was recently destroyed by fire at 151 and 153 Wabash avenue, Chicago, is to be replaced by a handsome 12-story structure to cost about \$300,000. S. D. Kimbark, Hardware merchant, is having the plans prepared, which call for a building with 40-foot front and a depth of 172 feet. The exterior will be constructed of pressed brick and terra cotta, while the interior will be fire proof. Construction is expected to begin in a short time.

O. LINDEMANN & Co., for many years at 81 Beekman street, New York, manufacturing Bird Cages of all descriptions with various accessories of this character, will, about June 1, remove to 35-37 Wooster street, where they will have larger accommodations.

JANNEY, SEMPLE, HILL & Co., Minneapolis, Minn., have amended their articles of incorporation, increasing the capital stock from \$500,000 to \$1,000,000. The new stock, preferred, has been subscribed by Messrs. Janney, Semple and Hill.

THE COLUMBIAN HARDWARE COMPANY, Cleveland, Ohio, and 14 Warren street, New York, have issued Volumes V and VI of "Timely Rhymes," by "Old Timer," the first "The Blacksmith's Panorama" and the other "Bunty Schmit," both booklets having other verses. In one of them several inquiries are made as to goods and the interest taken in the rhymes, with the accompanying return envelope for an expression of opinion.

JAMES G. SMITH, formerly at 84 Chambers street, New York, has moved to 17 Warren street, where he has a portion of the store floor and cellar space for stock. Mr. Smith handles a full line of General Shelf Hardware and represents as sole selling agent for New York and vicinity the Graham Mfg. Company, Derby, Conn., Keys, Bells, &c.; Victor Lock Company, Brooklyn, N. Y., Night

Latches, and Syracuse Twist Drill Company, Syracuse, N. Y., Twist Drills and Boring Tools.

THERE was a fire at the factory of Cooper & McKee, manufacturers of Refrigerators, Stove Boards, &c., Brooklyn, N. Y., shortly before midnight May 10, which at one time promised to be very serious, but owing to good management and an adequate force of firemen was eventually confined to the second floor. The building occupies a site on Middleton street, Nos. 132-142, and extends through to Gwinett street, where there is a frontage of 200 feet.

THE DAVIS FENCING COMPANY, 3711-3715 Colerain avenue, Cincinnati, Ohio, have been succeeded by Davis & Siehl. C. Fred. Siehl, for the past 17 years identified with the wholesale and retail Hardware trade, assumes the management of the new concern, who will manufacture Iron and Oak Picket Fencing as heretofore; also all kinds of Architectural Iron Work. In addition they will deal in Heavy Hardware and act as selling agents for the Park Ball Bearing Gas and Gasoline Engines. The new firm would be pleased to receive catalogues from Heavy Hardware manufacturers and arrange for representation.

THE LOCKWOOD-TAYLOR HARDWARE COMPANY, Cleveland, Ohio, have recently bought out the large House Furnishing Goods department of the J. M. & L. A. Osborn Company of that city. During the past year or two they have enlarged their place of business by the addition of the store, 114 Water street, together with a large warehouse in the rear.

At the regular monthly meeting of the Syracuse Chilled Plow Company, Syracuse, N. Y., held on the 12th inst., Col. A. C. Chase, after more than 20 years as president, resigned as president and trustee, and his son, Carleton A. Chase, succeeded to the presidency. Jonathan C. Chase also resigned as trustee. The vacancies in the board were filled by the election of Albert K. Hiscock and Aurin M. Chase. The following are the present officers: Carleton A. Chase, president; Joseph C. Willets and Aurin M. Chase, vice-presidents; William W. Wiard, secretary; James Manning, treasurer, and Harry Wiard, superintendent.

ALEXANDER L. SYKES, formerly with the Union Selling Company, distributors of Rope and Binder Twine, at their Indianapolis, Ind., branch house, has accepted a position as general manager of the Canadian Cordage & Mfg. Company, Peterborough, Ont.

SOME TIME since we announced the organization of a new firm of manufacturers' agents at Denver, Col., under the style of John J. Harlee & Co. The firm have lately completed arrangements for the representation of the products of 14 manufacturers, including E. Bement's Sons, Lansing, Mich.; O. K. Stove & Range Company, and Louisville Shovel Company, Louisville, Ky.; Mallory-Wheeler Company, New Haven, Conn.; Warren Axe & Tool Company, Warren, Pa.; Bonney Vise & Tool Works, Philadelphia, Pa.; Levant Emery Company, Boston, Mass.; H. C. Slingsby, New York; M. Lanz & Sons, Pittsburgh, Pa.; Rumsey & Co., Seneca Falls, N. Y.; Richards Mfg. Company, Aurora, Ill., and Trenton Rubber Mfg. Company, Trenton, N. J.

Evens Hardware Company, Princeton, Minn., have increased their capital stock from \$15,000 to \$50,000. Patrick K. Evens is president and Swan A. Petterson is secretary of the company, who deal in Hardware, Stoves, Tinware, Agricultural Implements, Harness, Buggies, Building Materials, Furniture, &c. They have lately completed a two-story and basement brick warehouse, 50 feet square.

After many years of service T. K. Jones has retired from active connection with the Hardware firm of T. K. Jones & Bro., Dover, Del. He will, however, retain an interest in the business, which will be continued under the style of T. K. Jones & Bro. Company, Henry P. Jones, son of John H. Jones, having been admitted as a member.

Golder, Peeler & Hodgkin have recently bought the business formerly conducted by the O'Neill Furniture & Hardware Company, O'Neill, Neb.

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### The Horse Shoe Door Check.

The accompanying illustrations represent the door check offered by the Horse Shoe Door Check Company, 28 School street, Boston, Mass. The check may be applied to a right or left hand door, inside or outside, as

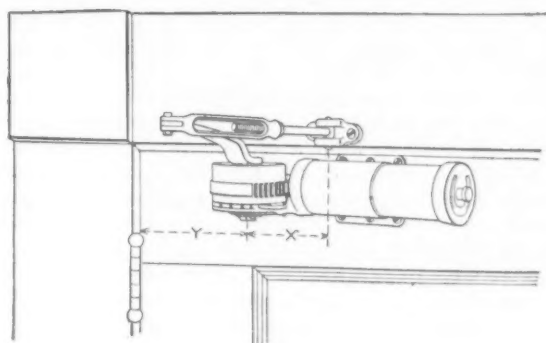


Fig. 1.—The Horse Shoe Door Check.

shown in Figs. 1 and 2, without extra parts or brackets. A thumb screw on the end of the cylinder regulates the closing speed, while the piston has a leather packing which adjusts itself to the cylinder. The tension of the

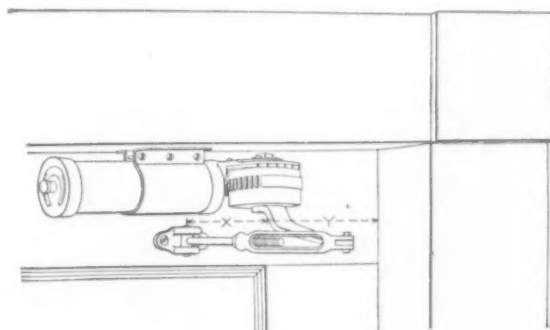


Fig. 2.—Horse Shoe Check Applied on Side Opposite to Hinges.

spring may be increased by turning the notched plate in the gear. The check is made in seven numbers, designed for use on doors and screen doors.

### A New Short Range Revolver Bullet.

The bullet shown herewith is designed by the Ideal Mfg. Company, New Haven, Conn., for use in revolvers taking 44 cal. S. & W. Russian cartridges. It was designed for short range, as the round ball up to this time has been the lightest used. It, however, has been discarded as unsuitable for this work with nitro powders on account of lack of bearing in the barrel. This objection has been overcome by making the new bullet longer and



A Short Range Revolver Bullet.

with wide and deep groove, taking out the metal, leaving the bullet same weight as the round ball. The round point on the bullet permits the use of the double adjustable chamber on the Ideal No. 3 tool for seating it in the shell. It is explained that the sharp edge on the front band cuts a clean hole in the target, and also scrapes residuum from the barrel, leaving it cleaner and obviating the probability of leading. The forward band is narrow; just metal enough to give good bearing. With the bands the bullet presents a long bearing in the rifling. The base band is heavy so as to stand up under the sharp blow given by nitro powder. The bullet weighs 125 grains and will be designated in the next catalogue of the company as No. 429239.

### Sliding Doors, System S.

The Perfect Sliding Door Company, Bridgeport, Conn., have developed a new system of sliding doors for general use throughout the house. The system requires but a single studded wall, as shown in Fig. 1, no thicker than

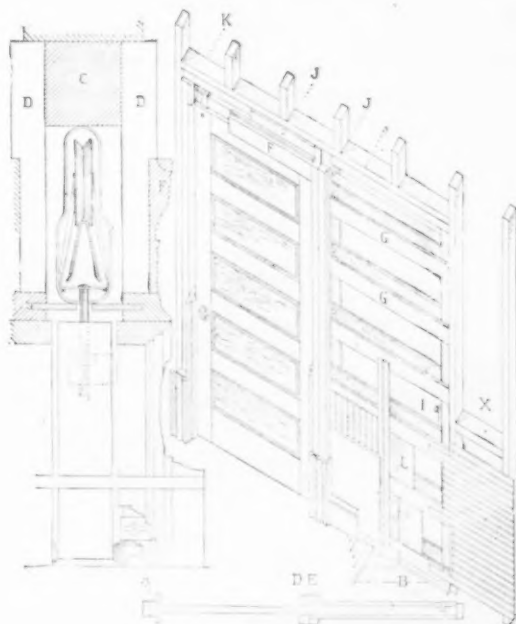


Fig. 1.—Structure for Single Studded Wall, System S.

is used for swinging doors. It is explained that a door can be operated with the slightest effort, made to close by gravity, momentum or by hand, and can also be operated automatically by either hand or foot, using the hanger shown in Fig. 2. System S, illustrated in Fig. 1, shows structure for a 2 x 4 single studded wall, affording a 2½-inch sliding space, but this system can be applied to



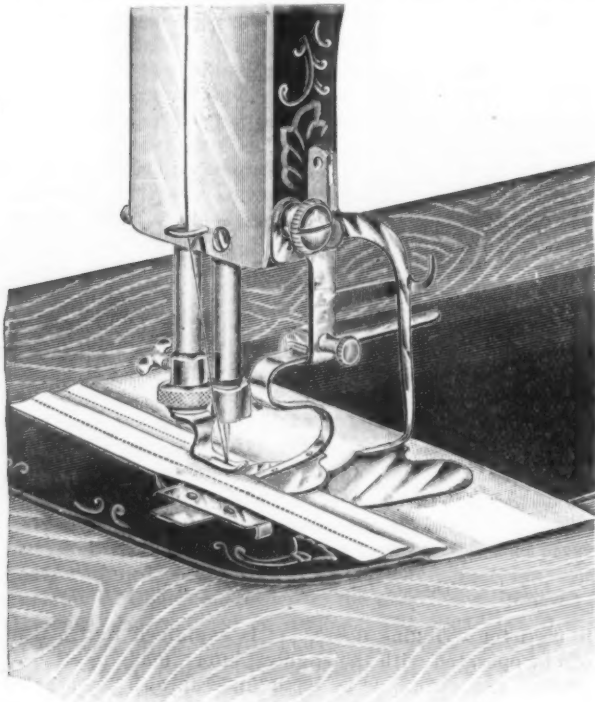
Fig. 2.—Perfect Sliding Door Hanger, System H.

any desired thickness of partition, or to double studded walls if preferred. The hanger and rail, system H, shown in Fig. 2 of this plan for sliding doors are referred to as having many new and distinctive features of value in helping to accomplish the foregoing results, also in securing accuracy and durability. Upon application the company will furnish catalogues containing fullest details as to wood work, locks, other hardware, &c.

Myers Hardware & Furniture Company, Tablequah, Ind. Ter., have been incorporated with a capital stock of \$15,000, with Louis Myers as president; C. B. Reiney, vice-president, and V. V. Beavers, secretary and treasurer. The company handle Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, Paints and Oils, Queensware, Glassware and furniture, at wholesale and retail.

### The Goforth Tuck Folder.

The accompanying cut represents a tuck folder offered by the National Sewing Machine Company, Belvidere, Ill., and applicable to any sewing machine of the company's manufacture. The folder attaches to the machine in place of the shuttle slide and by means of a thumb screw to the lower front edge of the face of the head. It is held rigid, it is explained, while the goods to be tucked are simply laid over the folder, the swinging arm

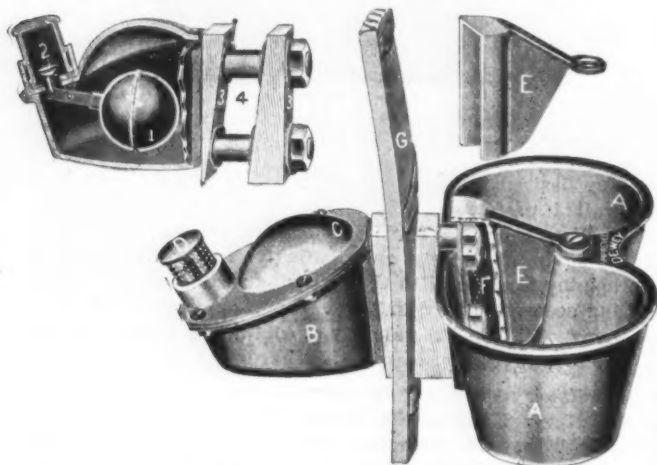


*The Goforth Tuck Folder.*

shown at the right is turned down and the machine started. It is remarked that the guide controls the work and insures accuracy in width of tuck and uniformity of space between tucks, producing beautiful work. The manufacturers state that the device will handle perfectly anything from chiffon to flannel, that it will tuck silks and satins as easily and perfectly as cotton or linen goods; that it will tuck straight, on the bias, around curves, over seams, and across other tucks; that it will produce the narrowest of "baby" tucks, and that no tuck marking or preliminary folding of the goods is required.

### The Improved Dewey Stock Waterer.

The Improved Dewey Stock Waterer shown herewith is manufactured by the B.B. Mfg. Company, Davenport,



*The Improved Dewey Stock Waterer.*

Iowa. The waterer consists of a double drinking bowl made of cast iron, which is attached to a tank or a barrel on the outside; on the inside is a cast iron chamber, B, inclosed in which is a brass float and lever, Nos. 1 and

2, which feeds the water to the outside bowl. The fountain is automatic in action. As the water fills the bowl A it backs up into the interior of the chamber—which is on the inside of the barrel and toward the bottom—to the same level. This raises the float valve, which pulls down the plug, No. 2, and cuts off the supply of water when the bowl is as full as it should be. If pure water is furnished to the tank or barrel to which the fountain is attached, it is claimed that there is no way by which the animal which is drinking can make it foul. When once in operation it is said that no further attention is needed during the balance of the season other than to keep a continuous supply of water. A prominent feature of the fountain is that it has no outside float, under which mud can gather and stop the flow of water, the float being inclosed in the iron chamber on the inside of the barrel free from all interference. Another advantage is that the fountain is strongly braced by the nipples F1 and F2, and cannot be turned from side to side or upside down by a hog endeavoring to root.

### Yankee Cork Puller.

The Gilchrist Company, Lafayette street, Newark, N. J., whose sales representatives are John H. Graham & Co., 113 Chambers street, New York, have put on the

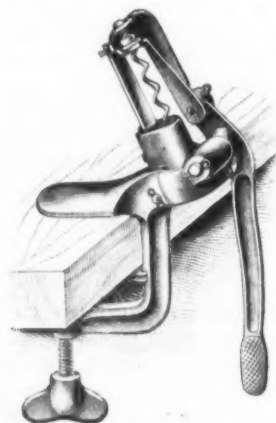


*Fig. 1.—Yankee Cork Puller, First Operation.*



*Fig. 2.—Cork Withdrawn.*

market the Yankee cork puller, in two styles, as here illustrated. Figs. 1 and 2 represent the puller designed to be fastened with two screws to any suitable upright for family or other use. The guide and upper part which works the worm screw are made of sheet steel, the parts are interchangeable and the various sections are held



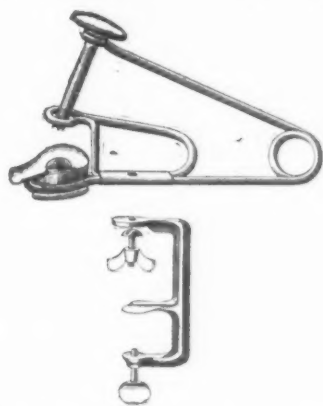
*Fig. 3.—Yankee Cork Puller to Clamp on Counter.*

together by means of cotter pins. Fig. 1 shows the first operation, gripping the neck of the bottle preparatory to forcing the worm into the cork, Fig. 2 illustrating the completed work with cork withdrawn, which is accomplished by one downward stroke of the lever handle. Fig. 3 represents a cork puller on the same principle made to clamp to a counter for hotel, restaurant, club and bar use. The pullers are finished in both nickel and silver plate.



### The Improved Royal Cherry Stoner.

The cherry stoner illustrated herewith is a new device being manufactured and placed on the market by the Royal Mfg. Company, Limited, 408 Commerce street, Philadelphia, Pa. The stoner may be used either as a hand seeder or may be clamped to a table. It is made of heavy wire, nicked and polished, the bowl being of metal and the clamp of iron. In operating the plunger

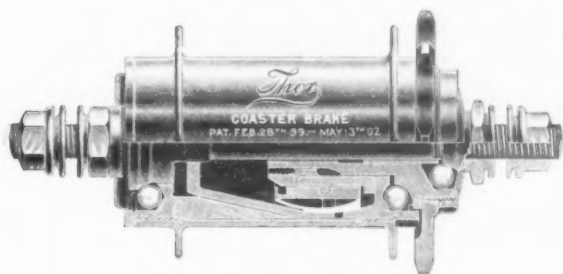


*The Improved Royal Cherry Stoner.*

is pressed down on the fruit and the cherry stone is pushed through the soft rubber base of the bowl, the cherry being automatically stripped from the plunger as it returns to position, falling into the bowl, which being slightly inclined allows the cherry to roll out into a suitable dish. An automatic stop is provided so that the plunger will not wear the rubber base of the bowl, but should the rubber wear a new one can readily be placed in position, as the bottom of the bowl is easily detached. It is claimed that the device is perfect in operation and that there is no mutilation of the fruit, the stone being pitted clear and clean.

### Thor Coaster Brake Hub.

The Aurora Automatic Machinery Company, Aurora, Ill., for whom Bradenburg Bros. & Alliger, New York and Chicago, are sole selling agents, have recently put on the market the Thor coaster brake hub, as here shown. This is in connection with a large, complete line of Thor component parts for motors, motor cycles and bicycles long made by them. The new coaster and brake is the result of the acquisition and amalgamation of several well tested patents with years of practical experience, together with added improvements of their own, suggested by their long identification with the cycle trade. Special attention is called by the makers to the Thor patented self-adjusting washers, turned from tool steel, which accommodate themselves, on the ball and socket joint principle, to varying angles of the rear forks of different makes of bicycles, &c., and the Thor principle of ball



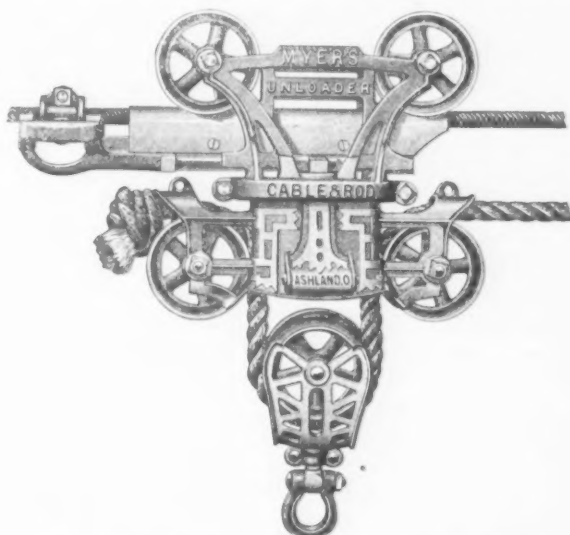
*Thor Coaster Brake Hub.*

retaining which permits of using the full number of balls in each bearing. The 1903 Thor reversible sprocket is used with the hub, by which either a  $1\frac{1}{2}$  or  $1\frac{3}{8}$ -inch chain line is obtained by merely reversing the sprocket. The sprocket operates through a driving sleeve, and is practically solid with the worm screw. In pedaling forward the worm sleeve is drawn into the taper of the ball cup, which makes a non-slipping clutch. When coasting the worm sleeve is automatically released and carries the

brake cone, while the hub shell runs free on its two bearings. In applying the brake by back pressure on pedals the worm sleeve is pressed against the brake cone, which in turn applies the pressure against the brake shoe. The left ball cone being held stationary by an arm or lever secured to the lower left rear fork prevents the brake cone revolving, and with the ample brake surface it possesses gives an effect sensitive to the touch and with abundant braking power. Two flat steel springs in connection with two blocks well protected and with very small action, held securely in the worm sleeve, makes, it is said, the action of driving forward, coasting and braking positive and instantaneous. The ball retainer rings also serve as dust protectors and will confine oil for lubrication within the hub. The braking strain does not affect the ball bearings, but is confined between brake shoe and plain surface of the cup. All hubs are drilled 36 holes, 14 gauge. Sprockets are furnished with from 6 to 10 teeth for  $\frac{1}{4}$  or 3-16-inch chain. Sprockets above 10 teeth or for  $\frac{1}{2}$ -inch pitch can be furnished at a special price. The spread from inside to inside of rear fork is  $4\frac{1}{2}$  inches and the hub complete is finely polished and nicked.

### The Myers Unloader for Cable or Rod Track.

F. E. Myers & Bro., Ashland, Ohio, have just brought out the unloader for cable or rod track, with patented swinging knocker, shown herewith. The carrier is built on the same plan as the concern's unloader for steel or wood track. It has large track wheels with wide groove



*Fig. 1.—The Myers Unloader for Cable or Rod Track.*

and long axle bearing. The carrier is fitted with wide open mouth and, it is explained, will receive the fork pulley from any direction regardless of the swinging of the load. The fork pulley is made with a short top and will swing backward and forward so as to receive the strain of the swinging load in starting from the knocker. The carrier is fitted with their patented double lock, which engages the knocker on either side. An enlarged view of the swinging knocker or stop block is shown in



*Fig. 2.—The Swinging Knocker.*

Fig. 2. This is one of the special features of the carrier and is arranged so as to swing loose on the track and to stand immediately beneath the cable under any circumstances. It is held to the cable by means of a steel sleeve through which the cable passes. The sleeve is attached to the knocker by means of two bolts and can be removed at any time without taking down the cable. The knocker is located at any desired point on the cable by means of an ordinary cable clamp.

### Spraying and Whitewashing Machines.

The White Mfg. Company, 192-194 Michigan street, Chicago, Ill., are placing on the market a line of spraying and whitewashing machines, made in five sizes, Nos. 2 and 4, which are illustrated herewith. Machine No. 2

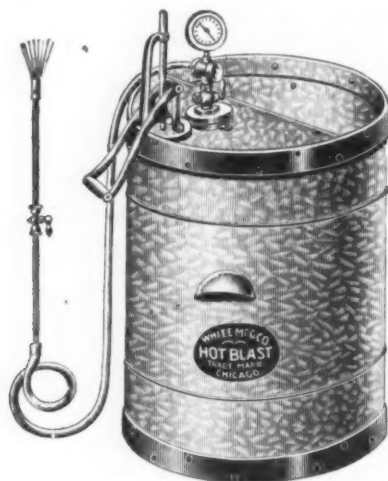


Fig. 1.—Spraying and Whitewashing Machine No. 2.

is provided with a 30-gallon galvanized iron tank reinforced by heavy steel bands, equipped with a large pump and automatic mixer with two outlets, so that two men can spray at the same time and independently of each other. This machine is recommended to contractors for all general work. The largest and most powerful machine which the company make is No. 4, which, being provided with an iron base, can be screwed to a board or

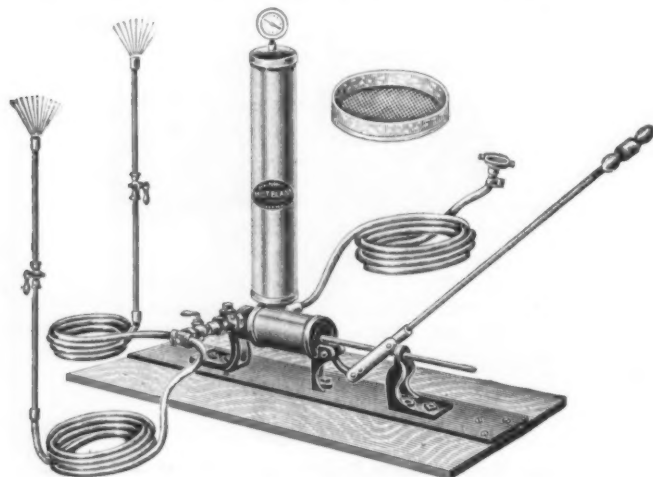


Fig. 2.—Spraying and Whitewashing Machine No. 4.

plank and placed upon a wagon and used for orchard spraying, being supplied from a receptacle such as a barrel, hogshead, tub or bucket. Like machine No. 2, No. 4 is provided with two independent spraying hose. All machines are fitted with brass parts, where the fluids used would be liable to corrode or rust.

### The Le Cl  r Pneumatic Door Check and Spring.

The Le Cl  r Mfg. Company, 107 Chambers street, New York, are putting on the market the pneumatic door check and spring shown in the accompanying cuts. It is especially designed for use on screen doors or very light inside



Fig. 1.—The Le Cl  r Pneumatic Door Check and Spring.

doors. It will go into a space of  $3\frac{1}{2}$  inches, and thus can easily be operated between the outer door and the screen door. It is held back in action, holding the door open when it has passed the center. The spring power is strongest when the door is in a closed position, holding

the door tightly closed, and gradually decreasing in power as the door is opened. The air pressure is regulated by a thumb screw. The device can be used on either right or left hand doors by reversing it, without extra

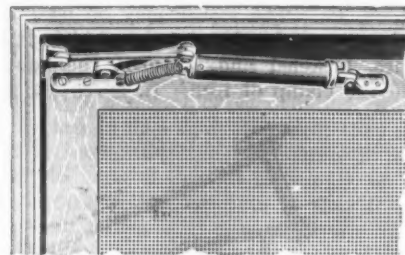


Fig. 2.—Manner of Applying Le Cl  r Check and Spring.

attachments. The manufacturers refer to the device as simple in construction and easily applied. It is furnished in regular bronze finish, bronze metal highly polished, and in bronze metal, antique finish. It is also made in special finishes to order.

### Starrett Screw Drivers Nos. 550 and 551.

The accompanying cuts represent patent screw drivers put on the market by the L. S. Starrett Company, Athol, Mass. Screw driver No. 550 has a knurled hard wood handle,  $1\frac{3}{4}$  inches in diameter, large enough to fill the hand and give leverage. Its steel shank has a socketed end to which is fitted a set of three screw driver tips of different sizes, adapted to screw heads, from very small up to  $\frac{3}{8}$ -inch. The tips are shaped and tempered to give



Starrett Screw Drivers.

the greatest strength. Either size may be instantly withdrawn and another inserted, thus supplying a full set of screw drivers at a comparatively small cost. The screw driver is 10 inches long. Tool No. 551 is the same as the one described, with the addition of a sleeve with spring fingers, which slide upon the shank, and a set of brad awls, which may be used interchangeably with the screw driver bits. The ends of the fingers grasp the head of the screw, draw it back and hold it in firm contact with the screw driver, so that the screw can be driven home straight and true without slipping from the head, and in places where it would be difficult to start screws with a common driver. The fingers also hold the brad awls from pulling out. The changing of one tool for another may be done almost instantly. Slipping the finger sleeve up against a stop and sliding the knurled ring closes them on the screw head and holds it tightly. The brad awls and screw driver tips are put up in a neat case and can be carried in the pocket.



# Current Hardware Prices.

REVISED MAY 19, 1903.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 $\frac{1}{2}$  @ 33 $\frac{1}{2}$  & 10% signifies that the

price of the goods in question ranges from 33 $\frac{1}{2}$  per cent. discount to 33 $\frac{1}{2}$  and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued April, 1902, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Abrasives—

Adamite in Carloads: ..... 25¢  
Crystal..... 25¢  
Grain..... 25¢  
See also *Emery*.

## Adjusters, Blind—

Domestic, 1/2 doz. \$3.00..... 33¢  
North's..... 10%  
Zimmerman's—See *Fasteners, Blind*.

## Window Stop—

Ives' Patent..... 25¢  
Taplin's Perfection..... 25¢

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Arm and Hammer, Wrought 1/2 doz. \$8.40  
Buel Patent Trenton..... 7¢  
Eagle Anvils..... 7¢  
Hay-Budden, Wrought..... 9¢  
Horseshoe brand, Wrought..... 9¢

## Imported—

Peter Wright & Sons..... 10¢

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00..... 10¢

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Hull Bros. Co.:  
Lots of 1 doz..... 25¢  
Smaller Lots..... 30¢  
Lots of 3 doz..... 30¢

## Augers and Bits—

Com. Double Spur..... 70¢  
Boring Machine Augers..... 70¢  
Car Bits, 12-in. twist..... 60¢  
Jennings' Pattern

Auger Bits..... 50¢  
Ford's Auger and Car Bits..... 40¢  
Forsner Pat. Auger Bits..... 35¢  
C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list 25¢ & 10¢  
No. 30, R. Jennings' list 40¢ & 10¢  
Russell Jennings..... 35¢  
L'Hommiedieu Car Bits..... 15¢  
Mayhew's Countersink Bits..... 45¢  
Millers' Falls..... 50¢  
Pugh's Black..... 20¢  
Pugh's Jennings' Pattern..... 35¢  
Snell's Auger Bits..... 60¢  
Snell's Bell Hangers' Bits..... 60¢  
Snell's Car Bits, 12-in. twist..... 60¢  
Wright's Jennings Bits (R. Jennings' list)..... 50¢

## Bit Stock Drills—

Standard List..... 65¢

## Expansive Bits—

Clark's small, 1/8; large, 1/4..... 50¢  
Lavigne's Clark's Pattern, No. 1..... 50¢  
C. E. Jennings & Co., Steer's Pat. 25¢ & 10¢  
Swan's..... 60¢

## Gimlet Bits—

Common Double Cut, gro. \$2.50 @ 3.00  
German Pattern..... gro. \$4.00 @ 4.25

## Hollow Augers—

Bonney Pattern, per doz. \$11.00 @ 11.50  
Amos..... 25¢  
New Patent..... 25¢  
Universal..... 20¢  
Wood's Universal..... 25¢

## Ship Augers and Bits—

Ford's..... 40¢  
Snell's..... 40¢  
C. E. Jennings & Co.:  
L'Hommiedieu's..... 15¢  
Watrous'..... 33¢

## Awl Hafts, See Hafts, Awl.

## Awls—

Brad Awls:  
Handled..... gro. \$2.75 @ 3.00  
Unhandled, Shouldered, gro. \$3.00 @ 3.50  
Unhandled, Patent..... gro. 60¢ @ 70¢

## Peg Awls—

Unhandled, Patent..... gro. 31¢ @ 3¢  
Unhandled, Shouldered, gro. 55¢ @ 70¢

## Scratch Awls—

Handled, Common..... gro. \$3.50 @ 4.00  
Handled, Socket..... gro. \$11.50 @ 12.00  
Hurwood..... 40¢

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

First Quality, factory brands..... \$6.00  
First Quality, jobbers' brands..... \$5.50  
Second Quality..... \$5.00 @ 5.25

## Axle Grease—See Grease, Axle.

## Axles—

Concord, Loose Collar..... 1/4 @ 5¢  
Concord, Solid Collar..... 1/4 @ 5¢  
No. 1 Common..... 3/4 @ 1¢  
No. 1 Com. New Style..... 3/4 @ 1¢  
No. 2 Solid Collar..... 1/4 @ 1¢  
Nos. 11 to 15..... 60¢ @ 10¢  
Nos. 15 to 18..... 70¢ @ 10¢  
Nos. 19 to 22..... 70¢ @ 10¢

Iron or Steel

Boxes, Axle—

Common and Concord, not turned..... 1/4 @ 1/2¢  
Common and Concord, turned..... 1/4 @ 1/2¢  
Half Patent..... 1/4 @ 1/2¢

Balances—Sash—

Caldwell new list..... 50¢  
Fullman's..... 60¢

Spring—

Spring Balances..... 50¢ @ 10¢  
Chattillon's:  
Light Spg. Balances..... 40¢  
Straight Balances..... 40¢  
Circular Balances..... 50¢  
Large Dial..... 40¢  
Petouze..... 50¢

Barb Wire—See Wire, Barb.

Bars—Crow—

Steel Crowbars, 10 to 1 1/2 lb., per lb. 3¢ @ 5¢

Towel—

No. 10 Ideal, Nickel Plate..... 85¢  
No. 20 Ideal, Brass Finish..... 85¢

Baskets—

Hoffman's Brick Baskets..... each \$3.25

Beams, Scale—

Scale Beams, List Jan. 12, '85, 10¢ @ 10¢  
Chattillon's No. 1..... 30¢  
Chattillon's No. 2..... 40¢

Beaters—Egg—

Lightning Chain, 1/2 doz. \$1.15; 1/2 doz. \$1.20

National Mfg. Co.:  
No. 1 Dover, Family size..... 87¢  
No. 2 Dover, Hotel size..... 1.00

Taplin Mfg. Co.:  
No. 60 Improved Dover..... 85¢  
No. 75 Improved Dover..... 87¢  
No. 75-2 Imp'd Dover, Tin'd..... 80¢  
No. 100 Improved Dover..... 88¢  
No. 102 Improved Dover, Tin'd..... 80¢  
No. 150 Improved Dover, Hotel..... 15¢  
No. 152 Imp'd Dover, Hotel, T'd..... 17¢  
No. 200 Imp'd Dover Tumbler..... 90¢  
No. 202 Imp'd Dover Tumbler, Tin'd..... 10¢  
No. 300, Imp'd Dover Mammoth..... 12¢  
doz..... \$7.00  
Wonder (S. S. & Co.)..... 1/2 doz. \$6.00

Bellows—

Blacksmith, Standard List 70¢ @ 70¢

Blacksmiths'—

Inch. 30 33 36 39 42 45 48 51 54 57 60 63 66 69 72 75 78 81 84 87 90 93 96 99 102 105 108 111 114 117 120 123 126 129 132 135 138 141 144 147 150 153 156 159 162 165 168 171 174 177 180 183 186 189 192 195 198 201 204 207 210 213 216 219 222 225 228 231 234 237 240 243 246 249 252 255 258 261 264 267 270 273 276 279 282 285 288 291 294 297 300 303 306 309 312 315 318 321 324 327 330 333 336 339 342 345 348 351 354 357 360 363 366 369 372 375 378 381 384 387 390 393 396 399 402 405 408 411 414 417 420 423 426 429 432 435 438 441 444 447 450 453 456 459 462 465 468 471 474 477 480 483 486 489 492 495 498 501 504 507 510 513 516 519 522 525 528 531 534 537 540 543 546 549 552 555 558 561 564 567 570 573 576 579 582 585 588 591 594 597 600 603 606 609 612 615 618 621 624 627 630 633 636 639 642 645 648 651 654 657 660 663 666 669 672 675 678 681 684 687 690 693 696 699 702 705 708 711 714 717 720 723 726 729 732 735 738 741 744 747 750 753 756 759 762 765 768 771 774 777 780 783 786 789 792 795 798 801 804 807 810 813 816 819 822 825 828 831 834 837 840 843 846 849 852 855 858 861 864 867 870 873 876 879 882 885 888 891 894 897 900 903 906 909 912 915 918 921 924 927 930 933 936 939 942 945 948 951 954 957 960 963 966 969 972 975 978 981 984 987 990 993 996 999 1002 1005 1008 1011 1014 1017 1020 1023 1026 1029 1032 1035 1038 1041 1044 1047 1050 1053 1056 1059 1062 1065 1068 1071 1074 1077 1080 1083 1086 1089 1092 1095 1098 1101 1104 1107 1110 1113 1116 1119 1122 1125 1128 1131 1134 1137 1140 1143 1146 1149 1152 1155 1158 1161 1164 1167 1170 1173 1176 1179 1182 1185 1188 1191 1194 1197 1200 1203 1206 1209 1212 1215 1218 1221 1224 1227 1230 1233 1236 1239 1242 1245 1248 1251 1254 1257 1260 1263 1266 1269 1272 1275 1278 1281 1284 1287 1290 1293 1296 1299 1302 1305 1308 1311 1314 1317 1320 1323 1326 1329 1332 1335 1338 1341 1344 1347 1350 1353 1356 1359 1362 1365 1368 1371 1374 1377 1380 1383 1386 1389 1392 1395 1398 1401 1404 1407 1410 1413 1416 1419 1422 1425 1428 1431 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3234 3237 3240 3243 3246 3249 3252 3255 3258 3261 3264 3267 3270 3273 3276 3279 3282 3285 3288 3291 3294 3297 3300 3303 3306 3309 3312 3315 3318 3321 3324 3327 3330 3333 3336 3339 3342 3345 3348 3351 3354 3357 3360 3363 3366 3369 3372 3375 3378 3381 3384 3387 3390 3393 3396 3399 3402 3405 3408 3411 3414 3417 3420 3423 3426 3429 3432 3435 3438 3441 3444 3447 3450 3453 3456 3459 3462 3465 3468 3471 3474 3477 3480 3483 3486 3489 3492 3495 3498 3501 3504 3507 3510 3513 3516 3519 3522 3525 3528 3531 3534 3537 3540 3543 3546 3549 3552 3555 3558 3561 3564 3567 3570 3573 3576 3579 3582 3585 3588 3591 3594 3597 3600 3603 3606 3609 3612 3615 3618 3621 3624 3627 3630 3633 3636 3639 3642 3645 3648 3651 3654 3657 3660 3663 3666 3669 3672 3675 3678 3681 3684 3687 3690 3693 3696 3699 3702 3705 3708 3711 3714 3717 3720 3723 3726 3729 3732 3735 3738 3741 3744 3747 3750 3753 3756 3759 3762 3765 3768 3771 3774 3777 3780 3783 3786 3789 3792 3795 3798 3801 3804 3807 3810 3813 3816 3819 3822 3825 3828 3831 3834 3837 3840 3843 3846 3849 3852 3855 3858 3861 3864 3867 3870 3873 3876 3879 3882 3885 3888 3891 3894 3897 3900 3903 3906 3909 3912 3915 3918 3921 3924 3927 3930 3933 3936 3939 3942 3945 3948 3951 3954 3957 3960 3963 3966 3969 3972 3975 3978 3981 3984 3987 3990 3993 3996 4000

Beams, Scale—

Scale Beams, List Jan. 12, '85, 10¢ @ 10¢  
Chattillon's No. 1..... 30¢  
Chattillon's No. 2..... 40¢

Beaters—Egg—

Lightning Chain, 1/2 doz. \$1.15; 1/2 doz. \$1.20

National Mfg. Co.:  
No. 1 Dover, Family size..... 87¢  
No. 2 Dover, Hotel size..... 1.00

Taplin Mfg. Co.:  
No. 60 Improved Dover..... 85¢  
No. 75 Improved Dover..... 87¢  
No. 75-2 Imp'd Dover, Tin'd..... 80¢  
No. 100 Improved Dover..... 88¢  
No. 102 Improved Dover, Tin'd..... 80¢  
No. 150 Improved Dover, Hotel..... 15¢  
No. 152 Imp'd Dover, Hotel, T'd..... 17¢  
No. 200 Imp'd Dover Tumbler..... 90¢  
No. 202 Imp'd Dover Tumbler, Tin'd..... 10¢  
No. 300, Imp'd Dover Mammoth..... 12¢  
doz..... \$7.00  
Wonder (S. S. & Co.)..... 1/2 doz. \$6.00

Bellows—

Blacksmith, Standard List 70¢ @ 70¢

Blacksmiths'—

Inch. 30 33 36 39 42 45 48 51 54 57 60 63 66 69 72 75 78 81 84 87 90 93 96 99 102 105 108 111 114 117 120 123 126 129 132 135 138 141 144 147 1

**Can Openers—See Openers, Cans, Milk—**

|                    |        |      |       |       |
|--------------------|--------|------|-------|-------|
| Illinois Pattern.  | \$1.50 | 2.00 | 2.25  | each. |
| Iowa Pattern.      | 2.00   | 2.50 | 2.50  | each. |
| New York Pattern.  | 1.65   | 2.40 | 2.75  | each. |
| Baltimore Pattern. | 1.50   | 2.00 | each. |       |

**Cans, Oil—**

|                          |       |         |     |  |
|--------------------------|-------|---------|-----|--|
| Buffalo Family Oil Cans: |       |         |     |  |
| 3                        | 5     | 10 gal. |     |  |
| \$48.00                  | 60.00 | 120.00  | gro |  |

**Caps—Percussion—**

|              |              |
|--------------|--------------|
| Eley's E. B. | per M 32@34c |
| G. D.        | per M 32@34c |
| F. L.        | per M 42@.c  |
| G. E.        | per M 47@50c |
| Musket.      | per M 62@.c  |

**Primers—**

|                                |             |
|--------------------------------|-------------|
| Berdan Primers, \$1.00 per M.  | 5%          |
| B. L. Caps (Sturtevant Shells) |             |
| \$1.00 per M.                  |             |
| All other primers per M.       | \$1.22@1.27 |

**Cartridges—**

|                             |        |     |    |  |
|-----------------------------|--------|-----|----|--|
| Blank Cartridges:           |        |     |    |  |
| 22 C. F.                    | \$5.50 | 10c | 5% |  |
| 22 C. F.                    | \$7.00 | 10c | 5% |  |
| 22 cal. Rim.                | \$1.50 | 10c | 5% |  |
| 22 cal. Rim.                | \$2.75 | 10c | 5% |  |
| B. B. Caps, Con. Ball Sngl. | \$1.90 |     |    |  |
| B. B. Caps, Round Ball      | \$1.40 |     |    |  |
| Central Fire                | 25%    |     |    |  |
| Target and Sporting Rifle   | 15c    | 5%  |    |  |
| Primed Shells and Bullets   | 15c    | 10% |    |  |
| Rim Fire Sporting           | 50%    |     |    |  |
| Rim Fire Military           | 15c    | 5%  |    |  |

**Cases, Show—**

|                                      |         |
|--------------------------------------|---------|
| Sun, No. 102, Silent Salesman, 6 ft. | \$35.00 |
|--------------------------------------|---------|

**Casters—**

|                           |        |     |
|---------------------------|--------|-----|
| Bed.                      | 70@70c | 10% |
| Plate                     | 60@60c | 5%  |
| Philadelphia              | 75@75c | 10% |
| Boss                      | 70@70c | 10% |
| Boss Anti-Friction        | 70@70c | 10% |
| Martin's Patent (Phoenix) | 45c    |     |
| Standard Ball Bearing     | 45c    |     |
| Tucker's Patent low list. | 30%    |     |

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coll—**

|   |      |      |                  |             |      |      |
|---|------|------|------------------|-------------|------|------|
| <b>American Coil, Jobbers' Shipments:</b> |      |      |                  |             |      |      |
| 3-16                                      | 1/4  | 5-16 | 3/8              | 7-16        | 1/2  | 9-16 |
| 8.50                                      | 6.10 | 4.50 | 4.00             | 3.50        | 3.70 | 3.65 |
| 3/4                                       | 3/4  | 3/4  | 1 to 1 1/4 inch. |             |      |      |
| 3.60                                      | 3.55 | 3.50 | 3.40             | per 100 lb. |      |      |
| <b>German Coil</b>                        |      |      | 60@10¢100        |             |      |      |

**Halters and Ties—**

|                                     |        |     |
|-------------------------------------|--------|-----|
| Halter Chains.                      | 60@60c | 10% |
| German Halter Chains, list July 26. | 97     |     |
| Cow Ties.                           | 50c    | 10% |

**Trace, Wagon, &c.—**

|  |          |
|--|----------|
| Traces, Western Standard:                              | 100 pair |
| 6½-6-3, Straight, with ring...                         | \$27.00  |
| 6½-6-2, Straight, with ring...                         | \$28.00  |
| 6½-8-2, Straight, with ring...                         | \$33.00  |
| 6½-10-2, Straight, with ring...                        | \$37.00  |
| Add 2c per pair for Hooks.                             |          |
| Twist Traces 2c per pair higher than<br>Straight Link. |          |
| Trace, Wagon and Fancy Chains...                       |          |

**Miscellaneous—**

|                                |        |     |  |  |
|--------------------------------|--------|-----|--|--|
| Jack Chain, list July 10, '93: |        |     |  |  |
| Iron.                          | 60@60c | 10% |  |  |
| Brass.                         | 60@60c | 10% |  |  |
| Safety Chain.                  | 70@70c | 10% |  |  |
| Gal. Pump Chain.               | 40@40c |     |  |  |
| Covert Mfg. Co.                |        |     |  |  |
| Breast.                        | 40@25  |     |  |  |
| Halter.                        | 40@25  |     |  |  |
| Heel.                          | 40@25  |     |  |  |
| Rein.                          | 40@25  |     |  |  |
| Stallion.                      | 40@25  |     |  |  |
| Covert Saddle Works.           |        |     |  |  |
| Breast.                        | 70%    |     |  |  |
| Halter.                        | 70%    |     |  |  |
| Hold Back.                     | 70%    |     |  |  |
| Rein.                          | 70%    |     |  |  |
| Omaha Community.               | 10@15c |     |  |  |
| Am. Coll and Halters.          | 45@50c |     |  |  |
| Eureka Coll and Halters.       | 45@50c |     |  |  |
| Niagara Coll and Halters.      | 45@50c |     |  |  |
| Niagara Cow Ties.              | 45@50c |     |  |  |
| Wire Dog Chains.               | 45@50c |     |  |  |
| Wire Goods Co.                 |        |     |  |  |
| Dog Chain.                     | 70@10% |     |  |  |
| Universal Dbl-Jointed Chain.   | 50%    |     |  |  |

**Chalk—(From Jobbers.)**

|                    |      |        |
|--------------------|------|--------|
| Carpenters' Blue.  | gro. | 40@15c |
| Carpenters' Red.   | gro. | 35@10c |
| Carpenters' White. | gro. | 30@35c |

See also Crayons.

**Checks, Door—**

|            |        |
|------------|--------|
| Bardley's. | 40@10% |
| Columbia.  | 50@10% |
| Kelpse.    | 60%    |

**Chests, Tool—**

|   |        |  |  |  |
|---|--------|--|--|--|
| American Tool Chest Co.:                |        |  |  |  |
| Boys' Chests, with Tools.               | 55%    |  |  |  |
| Youths' Chests, with Tools.             | 40%    |  |  |  |
| Gentlemen's Chests, with Tools.         | 30%    |  |  |  |
| Farmers', Carpenters', etc., Chests,    |        |  |  |  |
| with Tools.                             | 20%    |  |  |  |
| Machinists' and Pipe Fitters' Chests,   |        |  |  |  |
| Empty.                                  | 50%    |  |  |  |
| C. E. Jennings & Co.'s Machinists' Tool | 33@35c |  |  |  |
| Chests.                                 |        |  |  |  |

**Chisels—**

|                                    |        |     |  |  |
|------------------------------------|--------|-----|--|--|
| Socket Framing and Firmer          |        |     |  |  |
| Standard List.                     | 70@70c | 10% |  |  |
| No. 10.                            | 30@30c |     |  |  |
| C. E. Jennings & Co. Socket Firmer | 30%    |     |  |  |
| No. 15.                            | 60@10% |     |  |  |
| Swan's.                            | 70%    |     |  |  |
| L. & L. J. White.                  | 30@30c | 5%  |  |  |

**Tanged—**

|                 |     |       |
|-----------------|-----|-------|
| Tanged Firmers. | 40c | 4@10% |
| Rock Bros.      | 30% |       |
| Charles Buck.   | 30% |       |

|                                     |        |
|-------------------------------------|--------|
| C. E. Jennings & Co. Nos. 191, 191. | 16@10% |
| L. & L. J. White, Tanged.           | 25@5%  |

**Cold—**

|                                 |        |
|---------------------------------|--------|
| Cold Chisels, good quality, lb. | 13@15c |
| Cold Chisels, fair quality, lb. | 11@12c |
| Cold Chisels, ordinary.         | 8@9c   |

**Chucks—**

|                                    |        |
|------------------------------------|--------|
| Beach Pat., each \$8.00.           | 35@35c |
| Pratt's Positive Drive.            | 25%    |
| Empire.                            | 25%    |
| Blacksmiths.                       | 25%    |
| Skinner Patent Chucks:             |        |
| Combination Lathe Chucks.          | 40%    |
| Drill Chucks, Patent and Standard. | 30%    |
| Drill Chucks, New Model.           | 25%    |
| Independent Lathe Chucks.          | 25%    |
| Improved Planer Chucks.            | 25%    |
| Universal Lathe Chucks.            | 40%    |
| Face Plate Jaws.                   | 40%    |
| Standard Tool Co.                  |        |
| Improved Drill Chuck.              | 45%    |
| Union Mfg. Co.:                    |        |
| Combination.                       | 40%    |
| Car Drill.                         | 30%    |
| Geared Scroll.                     | 30%    |
| Independent.                       | 40%    |
| Union Drill.                       | 30%    |
| Universal.                         | 40%    |
| Face Plate Jaws.                   | 35%    |
| Wescott Patent Chucks:             |        |
| Lathe Chucks.                      | 50%    |
| Little Giant Auxiliary Drill.      | 40%    |
| Little Giant Double Grip Drill.    | 40%    |
| Little Giant Drill, Improved.      | 40%    |
| Oneida Drill.                      | 40%    |
| Scroll Combination Lathe.          | 40%    |

**Clamps—**

|                                    |        |    |
|------------------------------------|--------|----|
| Adjustable, Hammers.               | 20@20c | 5% |
| Cabinet, Sargent's.                | 50@10% |    |
| Carriage Makers', P. S. & W. Co.   | 50%    |    |
| Carriage Makers' Sargent's.        | 60%    |    |
| Bevy, Parallel.                    | 33@10% |    |
| Linemans, Utica Drop For Gen'l Co. | 40%    |    |
| Saw Clamps, see Vices, Saw Filers. |        |    |

**Cleaners, Drain—**

|                             |     |
|-----------------------------|-----|
| Iwan's Champion, Adjustable | 50% |
| Iwan's Champion, Stationary | 50% |

**Sidewalk—**

|                                     |     |   |
|-------------------------------------|-----|---|
| Star Socket, All Steel.             | 50c | \$4.05 net                                |
| Star Shank, All Steel.              | 50c | \$3.24 net                                |
| W. & C. Shank, All Steel, 7 1/2 in. | 50c | \$3.05; 8 in., \$3.10; 8 1/2 in., \$3.25. |

**Cleavers, Butchers—**

|                            |              |
|----------------------------|--------------|
| Foster Bros.               | 30%          |
| New Haven Edge Tool Co.'s. | 45%          |
| Fayette R. Plumb...        | 33@33c & 10c |
| P., S. & W.                | 50@50c & 5c  |
| L. & I. I. White           | 30%          |

**Clippers—**

|                                 |         |  |  |  |
|---------------------------------|---------|--|--|--|
| Chicago Flexible Shaft Company: |         |  |  |  |
| 98 Chicago Horse.               | \$8.75  |  |  |  |
| 1002 Chicago Horse.             | 10.75   |  |  |  |
| Lightning Belt.                 | \$15.00 |  |  |  |
| Chicago Belt.                   | \$20.00 |  |  |  |
| Stewart's Patent Sheep.         | \$18.50 |  |  |  |

**Clips Axle—**

|                                 |        |
|---------------------------------|--------|
| Eagle and Superior 1/4 and 5-11 | 70@10% |
| inch.                           | 70@10% |
| Norway, 1/2 and 5-16 inch.      | 70@10% |

**Cloth and Netting, Wire**

—See Wire, &amp;c.

**Cocks, Brass—**

|                               |        |     |  |  |
|-------------------------------|--------|-----|--|--|
| Hardware List:                |        |     |  |  |
| Compression and Plain Bibbs.  | 65@65c | 10% |  |  |
| Globe, Kerosene, Racking, &c. | 65@65c | 10% |  |  |
| Cocks.                        | 65@65c | 10% |  |  |

**Coffee Mills—See Mills, Coffee.****Collars Dog—**

|   |        |
|---|--------|
| Brass, Walter B. Stevens & Son's list.          | 40%    |
| Embossed, Gilt, Walter B. Stevens & Son's list. | 30@10% |
| Leather, Walter B. Stevens & Son's list.        | 40%    |
| <b>Combs Mane and Tail—</b>                     |        |
| Covert's Saddlery Works.                        | 60@10% |
| <b>Combses Builders &amp;</b>                   |        |

**Compasses Dividers, &c.**

|                                  |        |     |
|----------------------------------|--------|-----|
| Ordinary Goods.                  | 75@75c | 10% |
| Bemis & Call Hdwr. & Tool Co.:   |        |     |
| Dividers.                        | 65%    |     |
| Callipers, Call's Patent Inside. | 65%    |     |
| Callipers, Double.               | 65%    |     |
| Callipers, Inside or Outside.    | 65%    |     |
| Callipers, Wing.                 | 65%    |     |
| Compasses.                       | 50%    |     |
| J. Stevens A. & T. Co.           | 25@10% |     |

**Compressors Corn Shock—**

|                      |        |
|----------------------|--------|
| J. B. Hughes' # doz. | \$2.50 |
|----------------------|--------|

**Conductor Pipe, Galva.—**

|                                      |           |             |        |  |
|--------------------------------------|-----------|-------------|--------|--|
| L. C. L. to Dealers:                 |           |             |        |  |
| Territory.                           | Nested.   | Not nested. |        |  |
| Eastern.                             | 7@12 1/2% | 70c         | 1 1/2% |  |
| Central.                             | 7@7 1/2%  | 70%         |        |  |
| Southern.                            | 65@10%    | 65c         | 5%     |  |
| S. Western.                          | 65@7 1/2% | 65c         | 2 1/2% |  |
| Terms, 25 for cash. With delivery on |           |             |        |  |
| foot crabs.                          |           |             |        |  |
| See also Eave Troughs.               |           |             |        |  |

**Coolers, Water—**

|  |                                     |     |   |   |   |
|--|-------------------------------------|-----|---|---|---|
| Gal, each.   | 2                                   | 3   | 4 | 6 | 8 |
| Labrador \$1.20 \$1.50 \$1.80 \$2.10 2.70          |                                     |     |   |   |   |
| Gal.   | 3                                   | 4   | 6 | 8 |   |
| Iceland, ea. \$1.80 \$2.00 \$2.40 \$3.00           |                                     |     |   |   |   |
| Gal.   | 2                                   | 3   | 4 | 6 | 8 |
| Galv. Lined Ea. \$1.85 \$2.00 \$2.25 \$2.90 \$3.90 |                                     |     |   |   |   |
| Galv. Lined ea handles                             |                                     |     |   |   |   |
| Gal.   | 2                                   | 3   | 4 | 6 | 8 |
| Each.  | \$1.95 \$2.15 \$2.40 \$3.30 \$4.15. | 25% |   |   |   |

**Coopers' Tools—**

See Tools, Coopers'.

**Cord— Sash—**

|                            |        |                |
|----------------------------|--------|----------------|
| Braided, Drab.             | lb.    | 25c            |
| Braided, White, Com.       | lb.    | 17 1/2@15c     |
| Cable Laid Italian.        | lb.    | A, 15c; B, 16c |
| Common India.              | lb.    | 9 @ 9 1/2c     |
| Cotton Sash Cord, Twisted. | 12@10c |                |
| Patent Russia.             | lb.    | 1 1/4@13c      |
| Cable Laid Russia.         | lb.    | 1 1/4@13c      |
| India Hemp, Braided.       | lb.    | 15@12c         |
| India Hemp, Twisted.       | lb.    | 10@12c         |
| Patent India, Twisted.     | lb.    | 10@12c         |

|                              |        |  |  |  |
|------------------------------|--------|--|--|--|
| Anniston Cordage Co.:        |        |  |  |  |
| Old Glory, Nos. 7 to 12.     | 24     |  |  |  |
| Anniston, Nos. 7 to 12.      | 19     |  |  |  |
| Old Colony, Nos. 7 to 12.    | 18 1/2 |  |  |  |
| Anniston Drab, Nos. 7 to 12. | 24     |  |  |  |
| Pearl Braided, cotton.       | 17 1/2 |  |  |  |
| Massachusetts, White.        | 22 1/2 |  |  |  |
| Massachusetts, Drab.         | 26 1/2 |  |  |  |
| Eddystone Braided Cotton.    | 19     |  |  |  |
| Harmony Cable Laid Italian.  | 18 1/2 |  |  |  |
| Osawan Mills:                |        |  |  |  |
| Crown, Solid Braided White.  | 22 1/2 |  |  |  |
| Braided, Giant, White.       | 20 1/2 |  |  |  |
| Peerless:                    |        |  |  |  |
| Cable Laid Italian.          | 16 1/2 |  |  |  |
| Cable Laid Russian.          | 14 1/2 |  |  |  |
| Cable Laid India.            | 12 1/2 |  |  |  |
| Braided India.               | 18 1/2 |  |  |  |
| Phoenix, White.              | 19 1/2 |  |  |  |
| Samson, Nos. 7 to 12:        |        |  |  |  |
| Braided, Drab Cotton.        | 32 1/2 |  |  |  |
| Braided, Indian Hemp.        | 32 1/2 |  |  |  |
| Braided, Lined.              | 49 1/2 |  |  |  |
| Italian Hemp, Spot.          | 28 1/2 |  |  |  |
| No. 6 cords, 1 1/2 extra.    |        |  |  |  |
| Silver Lake:                 |        |  |  |  |
| A quality, Drab, 40c.        | 15%    |  |  |  |
| A quality, White, 35c.       | 15%    |  |  |  |
| B quality, Drab, 35c.        | 15%    |  |  |  |
| B quality, White, 30c.       | 15%    |  |  |  |
| Italian Hemp, 40c.           | 15%    |  |  |  |
| Linen, 57 1/2c.              | 15%    |  |  |  |

**Wire, Picture—**

|                |     |        |     |    |
|----------------|-----|--------|-----|----|
| List Oct. '00. | 85c | 10@85c | 10c | 5% |
|----------------|-----|--------|-----|----|

**Crackers, Nut—**

|               |       |  |  |  |
|---------------|-------|--|--|--|
| Little Giant. | 24.00 |  |  |  |
|---------------|-------|--|--|--|

**Cradles—**

|        |     |  |  |  |
|--------|-----|--|--|--|
| Grain. | 50% |  |  |  |
|--------|-----|--|--|--|

**Crayons—**

|                                       |        |    |
|---------------------------------------|--------|----|
| White Round Crayons, gross.           | 5%     | 6c |
| Cases, 100 gross, \$4.50, at factory. |        |    |
| D. M. Stewart Mfg. Co.:               |        |    |
| Metal Workers' Crayons, gr.           | \$2.50 |    |
| Stone Pencils, round, flat            |        |    |
| or square.                            | \$1.50 |    |
| Rolling Mill Crayons.                 | \$2.50 |    |
| Railroad Crayons (compo-              |        |    |
| sition) gr.                           | \$2.00 |    |

See also Chalk.

**Crooks, Shepherds—**

|                     |     |        |
|---------------------|-----|--------|
| Fort Madison, Heavy | 50c | \$7.00 |
| Fort Madison, Light | 50c | \$6.50 |

**Crow Bars—See Bars, Crow.****Cultivators—**

|               |     |  |  |  |
|---------------|-----|--|--|--|
| Victor Garden | 50% |  |  |  |
|---------------|-----|--|--|--|

**Cutlery, Table—**

|  |               |        |
|--|---------------|--------|
| No. 12 Medium Knives, 1847.                    | 50c           | \$3.50 |
| Star, Eagle, Rogers & Hamilton and Anchor..... | 1 doz.        | \$3.00 |
| Wm. Rogers & Son.....                          | 1 doz.        | \$2.50 |
| Simeon L. & Geo. H. Rogers Company:            |               |        |
| 12 dw. Medium Knives.....                      | 1 doz.        | \$3.00 |
| No. 77 Medium Knives.....                      | 1 doz.        | \$2.50 |
| <b>Cutters—</b>                                | <b>Glass—</b> |        |





|                                |     |
|--------------------------------|-----|
| Wire Coat and Hat:             |     |
| Acme.....                      | 60c |
| B. B.....                      | 60c |
| V. brace, Chief and Chief..... | 60c |
| Gem.....                       | 60c |
| Bright Wire Goods—See Wire.    |     |

**Wrought Iron—**

|   |                  |
|---|------------------|
| Box, 6 in., per doz. \$1.00; 8 in., \$1.25; |                  |
| 10 in., \$2.50.                             |                  |
| Cotton.....                                 | doz. \$1.05@1.25 |
| Wrought Staples, Hooks, &c.—                |                  |

**Miscellaneous—**

|                                     |                       |
|-------------------------------------|-----------------------|
| Bush, Light, doz. \$5.50; Medium,   |                       |
| 75 feet.....                        | \$6.00; Heavy, \$6.50 |
| Grass.....                          | Nos. 1 2 3 4          |
| Best.....                           | \$1.50 1.75 2.00      |
| Common.....                         | \$1.30 1.50 1.75      |
| Potato and Manure.....              | 60c@50%               |
| Whiffles.....                       | lb. 5c                |
| Hooks and Eyes:                     |                       |
| Brass.....                          | 60c@10c@10c@70%       |
| Madison Iron.....                   | 70c@50c@10c           |
| Covert Saddlery Works' Self Locking |                       |
| Gate and Door Hook.....             | 1.00                  |
| Ft. Madison Cut-Easy Corn Hooks,    |                       |
| per doz.....                        | \$5.35 net            |
| Crown Picture.....                  | 50c@10c               |
| Bench Hooks—See Bench Stops.        |                       |
| Corn Hooks—See Knives Corn.         |                       |

**Horse Nails—See Nails, Horse.****Horseshoes—**

See Shoes, Horse.

**Hose Rubber—**

|                                  |                 |
|----------------------------------|-----------------|
| Garden Hose, 3/4-inch:           |                 |
| Competition.....                 | ft. 1/4@1/4c    |
| 3-ply Standard.....              | ft. 6 @ 6c      |
| 4-ply Standard.....              | ft. 7 1/2@8 c   |
| 3-ply extra.....                 | ft. 8 1/2@9 c   |
| 4-ply extra.....                 | ft. 10 1/2@11 c |
| Cotton Garden, 3/4-in., coupled: |                 |
| Low Grade.....                   | ft. 6 @7 c      |
| Fair quality.....                | ft. 8 @9 c      |

**Irons—Sad—**

|                            |                 |
|----------------------------|-----------------|
| From 1 to 10.....          | lb. 2 1/4@3c    |
| B. B. Sad Irons.....       | lb. 3@3 1/4c    |
| Chinese Laundry.....       | lb. 4 1/4@5c    |
| Chinese Sad.....           | lb. 5 1/4@4c    |
| Mrs. Potts', per set:      |                 |
| Nos.....                   | 50 55 60 65     |
| Jap'd Tops.....            | 71c 71c 81c 81c |
| Tin'd Tops.....            | 77c 74c 87c 84c |
| New England Pressing, lb., |                 |
| per doz.....               | 3 1/2@3 1/4c    |

**Pinking—**

|                    |             |
|--------------------|-------------|
| Pinking Irons..... | doz. 50@60c |
|--------------------|-------------|

**Soldering—**

|                                  |        |
|----------------------------------|--------|
| Soldering Coppers 3/4 and 5..... | 21@22  |
| 1 1/2 and 2.....                 | 23@24c |
| Covert Mfg. Co.....              | 20@21c |

**Jacks, Wagon—**

|                           |        |
|---------------------------|--------|
| Covert Mfg. Co.:          |        |
| Auto Screw.....           | 30@55  |
| Steel.....                | 45@25  |
| Covert's Saddlery Works': |        |
| Daisy.....                | 60@10c |
| Viet.....                 | 60@10c |
| Lockport.....             | 50c    |
| Lane's Steel.....         | 30@10c |

**Knives—**

|                                   |        |
|-----------------------------------|--------|
| Brass, Spun, Plain.....           | 20@25c |
| Enamelled and Cast Iron—See Ware, |        |
| Hollow.                           |        |

**Knives—**

|                               |        |
|-------------------------------|--------|
| Butcher, Kitchen, &c.—        |        |
| Foster Bros' Butcher, &c..... | 30c    |
| Hartzell Cutlery Co.....      | 50c    |
| Smith & Newmanway Co.....     | 40@15c |
| Hay and Straw—See Hay Knives. |        |

**Corn—**

|  |  |
|--|--|
| Withington Acme, per doz., \$2.05; Dent, |  |
| \$2.75; Adj. Serrated, \$2.20; Ser-      |  |
| rated, \$2.10; Yankee No. 1, \$1.50;     |  |
| Yankee No. 2, \$1.15.                    |  |

**Drawing—**

|  |             |
|--|-------------|
| Standard List.....                       | 70@5@70@10c |
| Brady's.....                             | 40c         |
| C. E. Jennings & Co. Nos. 45, 46, 60@10c |             |
| Jennings & Griffin No. 51, 52, 60@10c    |             |
| Swan's.....                              | 70@10c      |
| Watrous.....                             | 10c@10c     |
| L. & J. White.....                       | 20@25@25c   |

**Hay and Straw—**

|                         |                      |
|-------------------------|----------------------|
| Lightning.....          | per doz. \$6.50@7.00 |
| Iwan's Sickle Edge..... | per doz. \$10.00     |
| Iwan's Serrated.....    | per doz. \$10.00     |
| Maine.....              | per doz. \$8.50      |

**Mincing—**

|              |                  |
|--------------|------------------|
| Buffalo..... | per gro. \$13.00 |
|--------------|------------------|

**Miscellaneous—**

|                   |                      |
|-------------------|----------------------|
| Farrier's.....    | doz. \$2.00@3.00     |
| Woolenholm's..... | per doz. \$3.00@3.25 |

**Knobs—**

|  |                  |
|--|------------------|
| Base, 2 1/2-inch, Birch, or Maple,       |                  |
| Rubber tip, gro.....                     | \$1.10@1.20      |
| Carriage, Jap. all sizes.....            | gro. 25@30c      |
| Door, Mineral.....                       | doz. 65@70c      |
| Door, Por. Jap'd.....                    | doz. 70@75c      |
| Door, Por. Nickel.....                   | doz. \$2.05@2.15 |
| Bardley's Wood Door, Shutter, &c., 1 1/2 |                  |
| Picture, Sargent's.....                  | 60@10c           |

**Lacing Leather—**

|                      |  |
|----------------------|--|
| See Belting Leather— |  |
|----------------------|--|

**Ladders Step Etc.—**

|                                    |     |
|------------------------------------|-----|
| Lane's Store.....                  | 25c |
| Myers Nolesless Store Ladders..... | 50c |

**Ladies—Melting—**

|                      |        |
|----------------------|--------|
| L. & G. Mfg. Co..... | 25c    |
| P. S. & W.....       | 25c    |
| Reading.....         | 80c    |
| Sargent's.....       | 45@10c |

**Lanterns—Tubular—**

|                            |                  |
|----------------------------|------------------|
| Regular Tubular No. 0..... | \$4.35@4.75      |
| Lift Tubular, No. 0.....   | doz. \$4.75@5.25 |
| Hinge Tubular, No. 0.....  | doz. \$4.75@5.25 |
| Other Styles.....          | 40c@10c@10c@5c   |

**Bull's Eye Police—**

|                        |             |
|------------------------|-------------|
| No. 1, 2 1/4 inch..... | \$2.50@2.75 |
| No. 2, 3 inch.....     | \$2.75@3.00 |

**Latches—Gate—**

|                            |              |
|----------------------------|--------------|
| Hoffman's Safety Gate..... | per doz. 60c |
|----------------------------|--------------|

**Thumb—**

|                                   |             |
|-----------------------------------|-------------|
| Roggin's Latches, with screw..... | doz. 35@50c |
|-----------------------------------|-------------|

**Leaders—Cattle—**

|                     |                      |
|---------------------|----------------------|
| Small.....          | doz. 55c; large, 60c |
| Covert Mfg. Co..... | 55@25c               |

**Lifters, Transom—**

|             |        |
|-------------|--------|
| R. & L..... | 33@35c |
|-------------|--------|

**Lines—**

|                        |                  |
|------------------------|------------------|
| Wire Clothes, Nos..... | 18 19 20         |
| 100 feet.....          | \$2.20 2.00 1.65 |
| 75 feet.....           | \$1.80 1.70 1.30 |

**Ossawa Mills—**

|  |   |
|--|---|
| Crown Solid Braided Chalk.....                       | 33@35c                                    |
| Mason's, No. 0 to No. 5.....                         | 33@35c                                    |
| Samson Cordage Works:                                |   |
| Solid Braided Chalk, No. 0 to 5.....                 | 40c                                       |
| Silver Lake Braided Chalk, No. 0, 1, 2, 3, 4, 5..... | \$1.00; No. 2, \$1.00; No. 3, \$1.00      |
| Anniston Waterproof Clothes, 50 lb.,                 |   |
| gro.....   | \$22.00; 60 lb. Edge, \$20.00; Air Liner, |
| \$21.00; Acme, \$15.00; Alabama, \$15.00;            |   |
| Empire, \$13.50; Advance, \$13.50; All-              |   |
| ston, \$11.50; Calhoun, \$10.00; Oriole,             |   |
| \$20.00; Albermarle, \$25.50; Eclipse,               |   |
| \$11.00; Chicago, \$10.00; Standard,                 |   |
| \$9.00; Columbia, \$8.00.                            |   |

**Locks—Cabinet—**

|                    |               |
|--------------------|---------------|
| Cabinet Locks..... | 33@35c@7 1/2c |
|--------------------|---------------|

**Door Locks, Latches, &c.—**

[Net prices are very often made on these goods.]

|                          |           |
|--------------------------|-----------|
| Reading Hardware Co..... | 50c       |
| R. & E. Mfg. Co.....     | 40@40@10c |
| Sargent & Co.....        | 40@40@10c |

**Elevator—**

|                |     |
|----------------|-----|
| Stowell's..... | 40c |
|----------------|-----|

**Padlocks—**

|  |                 |
|--|-----------------|
| Wrought Iron.....                          | 7c@10c@5@80c@5c |
| R. & E. Mfg. Co. Wrt. Steel and Brass..... | 75@75@10c       |

**Sash, &c.—**

|                               |                |
|-------------------------------|----------------|
| Ives' Patent.....             | 55@7 1/2c      |
| Bronze and Brass.....         | 55@7 1/2c      |
| Crescent.....                 | 50c            |
| Iron.....                     | 60@2 1/2c      |
| Wrought Bronze and Brass..... | 50@55c         |
| Reading.....                  | 60@10c@10c@70c |

**Machines—Boring—**

|                                      |        |
|--------------------------------------|--------|
| Com., Upright, Without Augers.....   | \$2.00 |
| Com., Angular, Without Augers.....   | \$2.25 |
| Without Augers.....                  |        |
| R. & E. Mfg. Co.: Upright, Angular,  |        |
| Improved No. 3, \$4.25 No. 1, \$5.00 |        |
| Improved No. 4, 3.75 No. 2, 3.38     |        |
| Improved No. 5, 2.75 No. 3, 2.38     |        |
| Jennings' No. 4, 3.15 No. 1, 3.50    |        |
| Millers' Falls.....                  | 5.75   |
| Snell's, Rice's Pat. 2.50            | 2.75   |

**Holisting—**

|   |     |
|---|-----|
| Moore's Anti-Friction Differential Pul-   |     |
| ley Block.....                            | 30c |
| Moore's Hand Holist, with Lock Brake..... | 20c |
| Moore's Portable Pneumatic Holist.....    | 25c |

**Ice Cutting—**

|                 |        |
|-----------------|--------|
| Chandler's..... | 15@10c |
|-----------------|--------|

**Washing—**

|                                    |         |
|------------------------------------|---------|
| Boss Washing Machine Co.: Per doz. |         |
| Boss No. 1; Boss Rotary.....       | \$57.00 |
| Boss No. 7; Dietz Rotary.....      | \$40.00 |
| Champion Rotary; Banner No. 1..... | \$54.00 |
| Standard Champion No. 1.....       | \$48.00 |
| Standard Perfection.....           | \$26.00 |
| Cinti Square Western.....          | \$30.00 |
| Uneda American, Roind.....         | \$29.00 |

**Mallets—**

|                                  |        |
|----------------------------------|--------|
| Hickory.....                     | 45@55c |
| Lignumvite.....                  | 45@55c |
| Tinners', Hickory and Applewood, |        |
| doz.....                         | 50@55c |

**Mats—Door—**

|                                |     |
|--------------------------------|-----|
| Elastic Steel (W. G. Co.)..... | 10c |
|--------------------------------|-----|

**Mattocks—**

See Picks and Mattocks.

**Menders Hose**

|                              |                 |
|------------------------------|-----------------|
| Robinson's Hose Menders..... | per gro. \$2.00 |
|------------------------------|-----------------|

**Milk Cans—See Cans, Milk****Mills—Coffee, etc.—**

|                                       |        |
|---------------------------------------|--------|
| Enterprise Mfg. Co.....               | 25@30c |
| Hoffman's Side, Coffee and Spice..... | 25@30c |

**National, List Jan. 1, '94**

|                                   |                 |
|-----------------------------------|-----------------|
| Parker's Columbia & Victoria..... | 50@10c          |
| Parker's Box and Side.....        | 50@10c          |
| Sun. No. 108, 1 1/2 mill.....     | per doz. \$3.00 |
| Swift, Lane Bros Co.....          | 30c             |

**Mowers, Lawn—**

Net prices are generally quoted.

|                                     |                        |
|-------------------------------------|------------------------|
| Cheap.....                          | all sizes, \$1.90@1.95 |
| Good.....                           | all sizes, \$2.25@2.50 |
| 10 12 14 16-inch                    |                        |
| High Grade L. 25 L. 50 L. 75 5.00   |                        |
| Continental.....                    | 40@10c                 |
| Great American.....                 | 7c                     |
| Great American Ball Bearing.....    | 60@10c                 |
| Quaker City.....                    | 70c                    |
| Pennsylvania.....                   | 40@10c                 |
| Pennsylvania Ball Bearing.....      | 60@10c                 |
| Pennsylvania Golf.....              | 40c                    |
| Pennsylvania Horse.....             | 40c                    |
| Pennsylvania Pony.....              | 45c                    |
| Philadelphia.....                   | 70@10c                 |
| Style A, all sizes.....             | 60@10c                 |
| Style High Wheel.....               | 70@10c                 |
| Drexel and Gold Coin, low list..... | 50@55c                 |

**Nails—**

Out and Wire. See Trade Report.

Wire Nail; and Brads, Papered.

List July 30, 1899.....

|                                  |  |
|----------------------------------|--|
| 85c 10c 10c 55c 10c 10c 10c      |  |
| Hungarian, Finishing, Upholster- |  |
| ers, &c. See Tacks.              |  |

**Horse—**

|                      |                     |
|----------------------|---------------------|
| Nos. 6 7 8 9 10..... | 40@55c              |
| A. C.....            | 25c 25c 25c 25c 25c |
| Autobell.....        | 25c 25c 25c 25c 25c |
| C. R. K.....         | 25c 25c 25c 25c 25c |
| Champion.....        | 25c 25c 25c 25c 25c |
| Clinton.....         | 19c 17c 16c 15c 14c |
| Maud S.....          | 25c 25c 25c 25c 25c |
| Putnam.....          | 25c 25c 25c 25c 25c |

**Putnam**

|                                 |                    |
|---------------------------------|--------------------|
| Cold Roll'd 19c 1c 17c 16c..... | 10@10c             |
| American, Nos. 5 to 10.....     | 9@9 1/2c           |
| Newcomet.....                   | Nos. 5 1 10c 1 12c |
| Jobbers' special brands.....    | per lb. 8@9c       |

**Picture**

|                           |                      |
|---------------------------|----------------------|
| 1 1/2 2 2 1/2 3 3 1/2 in. |                      |
| Brass Head.....           | 45 60 70 35 100 gro. |
| For Head.....             | 1.10 1.10 1.10       |
| Crown Picture Nails.....  | per gro. \$1.50      |

**Nippers, See Pliers and Nippers.****Nuts—**

|                          |           |
|--------------------------|-----------|
| Cold Punched.....        | Off list. |
| Mfrs. or U. S. Standard. |           |
| Square, plain.....       | \$1.50    |
| Hexagon, plain.....      | \$1.50    |
| Square, C. T. & R.....   | \$1.70    |
| Hexagon, C. T. & R.....  | \$1.70    |

**Hot Pressed:**

|                                    |        |
|------------------------------------|--------|
| Mfrs., U. S. or Nbr. Gauge Stan'd. |        |
| Square Blank.....                  | \$1.80 |
| Hexagon Blank.....                 | \$1.80 |
| Square Tapped.....                 | \$1.80 |
| Hexagon Tapped.....                | \$1.80 |

**Oakum—**

|  |            |
|--|------------|
| Best or Government.....                | lb. 6 1/4c |
| Navy.....                              | lb. 4 1/4c |
| U. S. Navy.....                        | lb. 5 1/4c |
| Plumbers' Spun Oakum.....              | 29c        |
| In carload lots 1/4 lb. off f.o.b. New |            |
| York.                                  |            |

**Oil Tanks—See Tanks, Oil.****Oilers—**

|   |            |
|---|------------|
| Brass and Copper.....                                   | 65@65@10c  |
| Tin or Steel.....                                       | 70@10c@75c |
| Zinc.....   | 75@75@10c  |
| Chase or Paragon.....                                   | 65@65@10c  |
| Brass and Copper.....                                   | 65@65@10c  |
| Tin or Steel.....                                       | 75@75@10c  |
| Zinc.....   | 76@76@10c  |
| Malleable, Hammers' Improved, No. 1,                    |            |
| \$3.60; No. 2, \$4; No. 3, \$4.40 per doz.              | 20c        |
| Malleable, Hammers' Old Pattern,                        |            |
| same list.....  | 50@10c     |
| American Pul & Stamping Co.:<br>Spring Bottom Cans..... | 70@70@10c  |
| Railroad Oilers etc.....                                | 60@60@10c  |

**Openers—Can—**

|                           |                  |
|---------------------------|------------------|
| French.....               | doz. 35c         |
| Iron Handle.....          | doz. 25@27c      |
| Sprague, Iron Handle..... | per doz. 55@60c  |
| Sardine Scissors.....     | doz. \$1.75@3.00 |
| Nation.....               | per doz. \$1.25  |
| Stowell's.....            | per doz. 35@45c  |
| Tip Top.....              | per doz. 80.75   |

**Egg—**

|                   |                  |
|-------------------|------------------|
| Nickel Plate..... | per doz., \$2.25 |
| Silver Plate..... | per doz., \$3.50 |

**Packing—**

|                                  |  |
|----------------------------------|--|
| Asbestos Packing, Wick and Rope, |  |
| 1 1/2@1 1/2c lb.                 |  |

**Rubber—**

|                                     |        |
|-------------------------------------|--------|
| Sheet, C. I.....                    | 8@12c  |
| Sheet, C. O. S.....                 | 9@15c  |
| Sheet, C. B. S.....                 | 10@14c |
| Sheet, Pure Gum.....                | 50@70c |
| Sheet, Red.....                     | 35@40c |
| Jenkins' Standard, 1/2 lb. 80c..... | 35@25c |

**Miscellaneous—**

|                       |               |
|-----------------------|---------------|
| American Packing..... | 70@10c lb.    |
| Cotton Packing.....   | 13@14c lb.    |
| Italian Packing.....  | 9@12 1/2c lb. |
| Russia.....           | 3 1/2@4c lb.  |
| Russia Packing.....   | 70@11c lb.    |

**Pails—Creamery**

|                               |               |
|-------------------------------|---------------|
| S. S. & Co., with gauges..... | No. 1 \$6.25; |
| No. 2, \$3.50 per doz.        |               |

**Galvanized—**



|                       |         |
|-----------------------|---------|
| Griffon, No. 00 ..... | \$12.00 |
| All other Razors..... | 40%     |
| Safety Razors.....    | 40%     |

|              |                 |
|--------------|-----------------|
| Boxwood..... | 60@60&10%       |
| Ivory.....   | 35&10@35&10&10% |

|                              |                              |
|------------------------------|------------------------------|
|                              | 60" & 5" @ 60" & 5" & 2 1/2" |
| Klondike Window Screens..... | 60" & 5" @ 60" & 5" & 2 1/2" |

**Screws—Bench and Hand—**

Bench, Iron, doz. 1 in. \$2.75 @ 3.00  
 1 1/4, \$3.25 @ 3.50  
 1 1/2, \$3.50 @ 3.75  
 Bench, Wood, Beech, doz. \$3.00 @ 3.50  
 Hand, Wood, doz. \$3.00 @ 3.50  
 R. Bliss Mfg. Co., Hand, doz. \$3.00 @ 3.50  
 Chapin-Stephens Co., Hand, doz. \$3.00 @ 3.50  
**Coach, Lag and Hand Rail—**  
 Lag, Common Point, list Oct. 1, '99, 70¢ @ 100¢  
 Coach and Lag, Gimlet Point, list Oct. 1, '99, 70¢ @ 100¢  
 Hand Rail, list Jan. 1, '81, 60¢ @ 100¢

**Jack Screws—**

Standard List, 75¢ @ 100¢ @ 50¢  
 Millers Falls, 50¢ @ 100¢  
 Millers Falls, Roller, 50¢ @ 100¢  
 P. S. & W., 50¢ @ 100¢  
 Sargent, 70¢ @ 100¢

**Machine—**

List Jan. 1, '98,  
 Flat or Round Head, Iron, 50¢ @ 50¢ @ 100¢  
 Flat or Round Head, Brass, 50¢ @ 50¢ @ 100¢

**Set and Cap—**

Set (Iron or Steel) 70¢  
 Sq. Hd. Cap. 65¢  
 Hex. Hd. Cap. 65¢  
 Rd. or Fillister Hd. Cap. 60¢

**Wood—**

List Jan. 1, 1900,  
 Manufacturers' printed discounts:  
 Flat Head, Iron, 87¢ @ 100¢  
 Round Head, Iron, 85¢ @ 100¢  
 Flat Head, Brass, 85¢ @ 100¢  
 Round Head, Brass, 80¢ @ 100¢  
 Flat Head, Bronze, 77¢ @ 100¢  
 Round Head, Bronze, 75¢ @ 100¢  
 Drive Screws, 87¢ @ 100¢

**Scroll Saws—See Saws, Scroll.****Scythes—**

Per doz.  
 Clipper Pattern, Grass, \$4.50 @ \$5.00  
 Full Polished Clipper, \$5.00 @ \$5.50  
 Grain, \$7.00 @ \$7.50  
 Clipper, Grain, \$7.50 @ \$8.25  
 Wood and Bush, \$4.75 @ \$5.00

**Seeders—**

Raisin, 25¢ @ 30¢  
**Sets—**

Brad Axl and Tool Sets:  
 Wood Hdl., 10 Axl. doz. \$2.00 @ 2.25  
 Wood Hdl., 14 Axl., 6 Tools, doz. \$2.50 @ 2.60

Alken's Sets, Axl. and Tools, No. 30, per doz. \$10.00  
 Fray's Adj. Tool Hdl., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7.  
 C. E. Jennings & Co.'s Model Tool Holders, 5¢ @ 10¢  
 Millers Falls Adj. Tool Hdl., No. 1, \$12; No. 4, \$12; No. 5, \$15  
 Stanley's Excelsior, No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50  
 Garden Tool Sets—  
 Ft. Madison, Three Piece, Hoe, Rake and Shovel, per doz. sets, \$9.00

**Nail—**

Square, per gro. \$2.25 @ 2.50  
 Round, Blk. and Pol., assorted, per gro. \$1.80 @ 2.50  
 Octagon, per gro. \$4.00 @ 4.25  
 Knurled, Good, per gro. \$5.75 @ 6.00  
 Buck Brothers, 27¢  
 Cannon's Diamond Point, per gr. \$12.35  
 Mayhew's, per gr. \$2.50  
 Snell's Corrugated, Cup Pt., per gro. \$7.50  
 Snell's Knurled, Cup Pt., per gro. \$7.50

**Rivet—**

Regular list, 70¢ @ 100¢  
**Saw—**  
 Genuine, 50¢ @ 100¢  
 Imitation, 60¢ @ 100¢  
 Atkin's, 40¢  
 Criterion, 40¢  
 Adjustable, 40¢  
 Bemis & Call Co.'s, 30¢  
 Cross Cut, 45¢  
 Hammer, new Pat., 20¢  
 Plate, 20¢  
 Spring Hammer, 40¢  
 Disston's Star and Monarch, 25¢  
 Morrill's No. 1, \$15.00  
 Nos. 3 and 4, Cross Cut, \$20.00  
 No. 5, Mill, \$30.00  
 No. 10, 11, 95¢ @ \$1.25  
 No. 1 Old Style, \$10.00  
 Giant Royal, Cross Cut, per doz. \$9.00  
 Royal, Hand, per doz. \$5.40  
 Talintor Positive, per doz. \$18.00

**Sharpeners, Knife—**

Chicago Wheel & Mfg. Co., 65¢  
 Smith & Hemenway Co., 70¢  
**Shaves Spoke—**

Iron, doz. \$1.00 @ 1.15  
 Wood, doz. \$1.05 @ 1.25  
 Bailey's (Stanley R. & L. Co.), 50¢ @ 50¢ @ 100¢  
 Chapin-Stephens Co., 50¢ @ 50¢ @ 100¢  
 Goodell's, per doz. \$9.00  
 Wood's P. 1 and P. 2, 50¢

**Shears—**

Cast Iron, 7 8 9 in.  
 Best, \$16.00 18.00 20.00 gro.  
 Good, \$13.00 15.00 17.00 gro.  
 Cheap, \$9.00 6.00 7.00 gro.  
 Straight Trimmers, etc., 70¢ @ 70¢ @ 100¢  
 Best quality, Jap., 60¢ @ 60¢ @ 100¢  
 Fair qual. Jap., 80¢ @ 80¢ @ 100¢  
 Nickel, 75¢ @ 75¢ @ 100¢  
 Tailors' Shears, 40¢ @ 40¢ @ 100¢  
 Acme Cast Shears, 40¢ @ 40¢ @ 100¢  
 Geneva, 60¢  
 Heinich's Tailors' Shears, 40¢  
 Wilkinson's Hedee, 1900 list 45¢  
 Wilkinson's Pruning, 40¢  
 Wilkinson's Sheep, 1900 list 25¢

**Tinners' Snips—**

Steel Blades, 30¢ @ 50¢ @ 20¢ @ 10¢  
 Steel Blade Blades, 40¢ @ 10¢ @ 5¢  
 Ferged Handles, Steel Blades, Berlin, 40¢ @ 40¢ @ 10¢  
 Jennings & Griffin Mfg. Co.'s, 6 1/2 to 10 inch, 40¢ @ 70¢ @ 100¢  
 Niagara Snips, 40¢  
 P. S. & W. Co., 20¢

**Pruning Shears and Tools—**

Cronk's Grape Shears, 33¢  
 Cronk's Pruning Shears, 33¢  
 Disston's Combined Pruning Hook and Saw, per doz. \$18.00  
 Disston's Pruning Hook, per doz. \$12.00  
 John T. Henry Mfg. Co.:  
 Pruning Shears, all grades, 40¢ @ 40¢ @ 50¢  
 Orange Shears, 50¢ @ 100¢ @ 20¢  
 Grape, 40¢ @ 100¢ @ 50¢  
 Tree Pruners, 75¢  
 P. S. & W. Co., 33¢ @ 33¢

**Sheaves—Sliding Door—**

Stowell's Anti-Friction, 50¢  
 Patent Roller Hatfield's, Sargent's list, 70¢ @ 100¢  
 Reading, 70¢ @ 100¢ @ 75¢  
 R. & E. list, 33¢ @ 33¢  
 Wrightville Hatfield's Patent, 50¢

**Sliding Shutter—**

Reading list, 70¢ @ 100¢ @ 75¢  
 R. & E. list, 33¢ @ 33¢  
 Sargent's list, 50¢ @ 100¢

**Shells—Shells, Empty—**

Brass Shells, Empty:  
 First quality, all gauges, 60¢ @ 5¢  
 Climax, Club, Rival, 10 and 12 gauges, 65¢ @ 5¢

Paper Shell, Empty:  
 Acme, Ideal, Leader, New Rapid, Magic 10, 12, 16 and 20 gauge, 25¢ @ 5¢  
 Blue Rival, New Climax, Challenge, Monarch, DeLancey, New Victor, Repeat, Yellow Rival, 10, 12, 16 and 20 gauge, 20¢  
 Climax, Union, League, New Rival 10 and 12 gauge, 25¢  
 Climax, Union, League, New Rival 14, 16 and 20 gauge (\$7.50 list), 20¢  
 Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge, 35¢ @ 25¢  
 Robin Hood, Low Brass, 30¢ @ 10¢  
 Robin Hood, High Brass, 30¢ @ 10¢

**Shells, Loaded—**

Loaded with Black Powder, 40¢  
 Loaded with Smokeless Powder, medium grade, 40¢ @ 5¢  
 Loaded with Smokeless Powder, high grade, 40¢ @ 10¢ @ 10¢  
 Robin Hood, Low Brass, 50¢  
 Robin Hood, High Brass, 50¢ @ 10¢

**Shoes Horse, Mule, &c.—**

F. O. B., Pittsburg:  
 Iron, per keg \$3.85  
 Steel, per keg 3.60  
 Burden's, all sizes, per keg, \$3.90

**Shot—**

Drop, up to B, 25-lb. bag, \$1.40  
 Drop, B and larger, per 25-lb. bag, \$1.65  
 Buck, 25-lb. bag, \$1.65  
 Chilled, 25-lb. bag, \$1.65  
 Dust Shot, 25-lb. bag, \$2.00

**Shovels and Spades—**

Association List, Nov. 15, 1902, 40¢

**Sieves and Sifters—**

Hunter's Imitation, gro. \$11.00 @ 11.50  
 Buffalo Metallic Blue, S. S. & Co., per gr.:  
 14 & 16 16 & 18 18 & 20  
 \$12.90 \$13.80 \$15.00

National Mfg. Co.:  
 Victor, per gro. \$12.00  
 Surprise, per gro. \$11.00  
 No Name, per gro. \$11.00  
 Shaker (Barber's Pat.) Flour Sifters, per doz., \$2.00

**Sieves, Tin Rim—**

Per dozen  
 Mesh 14 16 18 20  
 Black, full size, \$1.20 1.25 1.30 1.35  
 Plated, full size, \$1.30 1.35 1.40 1.45  
 Black, scant, \$0.95 1.00 1.05

**Sieves, Wooden Rim—**

Nested, 10, 11 and 12 inch.  
 Mesh 18, Nested, doz. \$0.65 @ 0.75  
 Mesh 20, Nested, doz. .75 @ .85  
 Mesh 24, Nested, doz. .90 @ 1.00

**Sinks—****Cast Iron—**

Standard list, 60¢ @ 60¢ @ 100¢  
 NOTE—There is entire uniformity lists used by jobbers.

**Skins Wagon—**

Cast Iron, 70¢ @ 70¢ @ 100¢  
 Malleable Iron, 40¢ @ 100¢ @ 50¢  
 Steel, 40¢ @ 100¢ @ 100¢

**Slates, School—**

Factory Shipments.  
 "D" Slates, 45¢  
 Noiseless Slates, 60¢ @ 100¢ @ 5¢  
 Wire Bound, 40¢

**Slaw Cutters—See Cutters.****Slicers, Vegetable—**

Sterling No. 10, \$2.00, 33¢

**Snaps, Harness—**

German, 40¢ @ 100¢ @ 100¢  
 Covert Mfg. Co.:  
 Derby, 20¢ @ 20¢ @ 20¢  
 High Grade, 45¢  
 Jockey, 45¢  
 Trojan, 40¢ @ 40¢ @ 100¢  
 Yankee, 30¢ @ 30¢ @ 25¢  
 Yankee, Roller, 30¢ @ 30¢ @ 25¢

**Covert's Saddlery Works:**

Crown, 60¢  
 German, 60¢  
 Moccasin, 60¢  
 Oneida Community, 60¢  
 Solid Steel, 60¢ @ 5¢  
 Solid Wire, 60¢  
 Sargent's Patent Guarded, 60¢ @ 100¢

**Snaths—**

Scythe, 60¢ @ 70¢ @ 100¢

**Snips, Tinners'—See Shears.****Spoons and Forks—****Silver Plated—**

Good Quality, 50¢ @ 100¢ @ 60¢ @ 100¢  
 Cheap, 60¢ @ 100¢ @ 100¢  
 International Silver Co.:  
 1847 Rogers Bros. and Rogers & Hamilton, 40¢ @ 100¢  
 Rogers & Bro., William Rogers Eagle Brand, 50¢ @ 100¢  
 Anchor, Rogers Brand, 60¢  
 Wm. Rogers & Son, 60¢ @ 100¢  
 Simeon L. & Geo. H. Rogers Co.:  
 Silver Plated Flat Ware, 60¢  
 No. 77 Silver Plated Ware, 60¢ @ 100¢

**Miscellaneous—**

German Silver, 60¢ @ 60¢ @ 100¢  
 Castaragus Cutlery Co.:  
 Yukon Silver, 50¢  
 Simeon L. & Geo. H. Rogers Co.:  
 German or Nickel Silver, Special list 1. & 10¢

**Tinned Iron—**

Teas, per gro. 65¢ @ 50¢  
 Tables, per gro. 90¢ @ 1.00

**Springs—Door—**

Gem (Coll), 20¢  
 Star (Coll), 30¢  
 Torrey's Rod, 30 in., per doz. \$1.10  
 Victor (Coll), 50¢ @ 100¢ @ 100¢

**Carriage, Wagon, &c.**

1 1/4 in. and Wider:  
 Black or 1/4 Bright, lb., 54¢  
 Bright, lb., 54¢  
 Painted Seat Springs:  
 1 1/4 x 2 x 26, per pr., 60¢ @ 55¢  
 1 1/4 x 2 x 28, per pr., 60¢ @ 55¢  
 1 1/4 x 3 x 28 and narrower, per pr., 80¢ @ 85¢

**Sprinklers, Lawn—**

Enterprise, 25¢ @ 30¢  
 Mackey, per doz. \$1.80  
 Philadelphia No. 1, per doz. \$12; No. 2, \$15; No. 3, \$24  
 Philadelpha, 30¢

**Squares—**

Nickel plated, List Jan. 5, 1900,  
 Steel and Iron, 70¢ @ 100¢  
 Rosewood Hdl. Try Square and T-Bevels, 60¢ @ 100¢ @ 70¢  
 Iron Hdl. Try Squares and T-Bevels, 40¢ @ 100¢ @ 100¢  
 Disston's Try Sq. and T-Bevels, 70¢  
 Winterbottom's Try and Miter, 40¢ @ 100¢ @ 100¢

**Squeezers—Lemon—**

Wood, Common, gro., No. 6, \$5.25  
 \$5.50; No. 1, \$6.25 @ \$5.50.  
 Wood, Porcelain Lined,  
 Cheap, doz. \$2.00 @ 2.75  
 Good Grade, doz. \$3.00 @ 3.50  
 Tinned Iron, doz. \$0.75 @ 1.25  
 Iron, Porcelain Lined doz. \$2.90 @ 3.25

**Staples—**

Barbed Blind, lb. 6¢ @ 6¢  
 Electricians', Association list, 80¢ @ 100¢ @ 100¢  
 Fence Staples, See Trade Report.  
 Galvanized, 10¢ less than Barb Wire  
 Plished, 30¢ less than Barb Wire.  
 Poultry Netting, Staples, per lb., 34¢ @ 24¢  
 Grand Crossing Tack Co.'s list, 80¢ @ 100¢

**Steels, Butchers'—**

Dick's, 30¢  
 Foster Bros', 30¢  
 Hartzell Cutlery Co., 40¢ @ 50¢  
 C. & A. Hoffmann's, 40¢

**Stockyards and Dies—**

Blacksmiths', 40¢ @ 100¢ @ 50¢  
 Curtis Reversible Ratchet Die Stock, 25¢  
 Derby Screw Plates, 25¢  
 Gardner Die Stocks No. 1, 25¢  
 Gardner Die Stocks, larger sizes, 40¢  
 Green River, 25¢  
 Lightning Screw Plate, 25¢  
 Little Giant, 25¢  
 Reece's New Screw Plates, 25¢ @ 30¢

**Stone—****Scythe Stones—**

Chicago Wheel & Mfg. Co.:  
 Gem Corundum, 10 inch, \$3.00 per gro., 12 inch, \$10.00  
 Pike Mfg. Co. 1901 list:  
 Black Diamond S. S., per gro. \$12.00  
 Lamolite S. S., per gro. \$11.00  
 White Mountain S. S., per gro. \$9.00  
 Green Mountain S. S., per gro. \$6.00  
 Extra Indian Pond S. S., per gro. \$7.50  
 No. 1 Indian Pond S. S., per gro. \$7.00  
 No. 2 Indian Pond S. S., per gro. \$4.50  
 Leader red End S. S., per gro. \$4.50  
 Balance of 1901 list 33¢

**Oil Stones, &c.**

Chicago Wheel & Mfg. Co. 1901 list:  
 Gem Corundum Oil, Double Grif, 50¢  
 Gem Corundum Axe, Single or Double Grif, 50¢  
 Gem Corundum Slips, 50¢  
 Gem Corundum Razor Hones, 50¢  
 Pike Mfg. Co. 1901 list:  
 Arkansas Stone, No. 1, 3 to 5 in., \$2.50  
 Arkansas Stone, No. 1, 5 to 10 in., \$3.50  
 Arkansas Slips No. 1, 1 to 2 in., \$4.00  
 Lily White Washita, 4 to 8 in., 60¢  
 Rosy Red Washita, 4 to 8 in., 60¢  
 Washita Stone, Extra, 4 to 8 in., 50¢  
 Washita Stone, No. 1, 4 to 8 in., 40¢  
 Washita Stone, No. 2, 4 to 8 in., 30¢  
 Lily White Slips, 90¢  
 Rosy Red Slips, 90¢  
 Washita Slips, Extra, 80¢  
 Washita Slips, No. 1, 70¢  
 India Oil Stones (entire list), 33¢ @ 50¢

Hagostan No. 1, Regular, 50¢ @ 50¢  
 Hagostan No. 1, Small, 50¢ @ 100¢  
 Axe Stones (all kinds), 50¢ @ 100¢  
 Turkey Oil Stones, ex. 5 to 8 in., 50¢  
 Queer Creek Stones, 4 to 8 in., 30¢  
 Queer Creek Slips, 40¢  
 Sand Stone, 5¢  
 Belgian, German and Swaty Razor Hones, 50¢  
 Natural Grit Carving Knife Hones, 50¢  
 Quick Edge Pocket Knife Hones, 85¢  
 Quick Edge Pocket Knife Hones, 85¢  
 Mounted Kitchen Sand Stone, 80¢  
 do, 80¢ @ 100¢

**Stoners—Cherry—**

Enterprise, 25¢ @ 30¢

**Stops Bench—**

Millers Falls, 15¢ @ 100¢  
 Morrill's, per doz. No. 1, \$10.00, 50¢  
 Morrill's, No. 2, \$12.50, 50¢

**Door—**

Chapin-Stephens Co., 60¢ @ 60¢ @ 100¢

**Plane—**

Chapin-Stephens Co., 2¢

**Straps—Box—**

Cary's Universal, case lots, 20¢ @ 100¢

**Hame—**

Covert's Saddlery Works, 60¢ @ 100¢

**Stretchers, Carpet—**

Cast Iron, Steel Points, doz. 55¢ @ 60¢  
 Sockel, doz. \$1.75

**Stuffers Sausage—**

Enterprise Mfg. Co., 25¢ @ 25¢ @ 75¢  
 National Specialty Mfg. Co., list Jan. 1, '07, 30¢

**Supports, Porch—**

Hoffman's Porch Supports, per doz. 25¢

**Sweepers, Carpet—**

National Sweeper Co.:  
 Marion, Roller Bearing, regular finishes, full Nickel, \$24.00  
 Marion Queen, Roller Bearing, Fancy Veneers, full Nickel, \$27.00  
 Monarch, Roller Bearing, Nickel, \$22.00  
 Monarch, Roller Bearing, Jap. red, \$20.00  
 Marion Queen, Roller Bearing, Regular Finishes, full Nickel, \$24.00  
 Transparent, Roller Bearing, Plate Glass Top, Nickel, \$32.00  
 Monarch Extra, Roller Bearing, (17-inch case), Nickel, \$36.00  
 Monarch Extra, Roller Bearing, (17-inch case), Japanned, \$33.00  
 Perpetual, Regular Bearings, Nkl. \$20.00  
 Perpetual, Regular Bearings, Jap. \$15.00  
 NOTE—Discount of 30¢ per dozen on three-dozen lots. Discount of \$1 per dozen on five-dozen lots.

**Tacks Brads, &c.—**

List Jan. 15, '99,  
 Carpet Tacks, American, 90¢ @ 25¢ @ 50¢  
 American Cut Tacks, 90¢ @ 25¢ @ 50¢  
 Swedish Iron Tacks, 90¢ @ 25¢ @ 50¢  
 Swedish Upholsterers' Tacks, 90¢ @ 25¢ @ 50¢  
 Gimp Tacks, 90¢ @ 25¢ @ 50¢  
 Lace Tacks, 90¢ @ 25¢ @ 50¢  
 Trimmers' Tacks, 90¢ @ 25¢ @ 50¢  
 Looking Glass Tacks, 70¢ @ 100¢  
 Bill Posters' and Railroad Tacks, 90¢ @ 25¢ @ 50¢  
 Hungarian Nails, 90¢ @ 25¢ @ 50¢  
 Common and Patent Brads, 80¢ @ 100¢  
 Trunk and Clout Nails, 80¢ @ 50¢  
 NOTE—The above prices are for straight weights. An extra 5¢ is given Star Weights and an extra 10¢ on standard weights.

**Miscellaneous—**

Double Point Tacks, 50¢ and 5 tens  
 Steel Wire Brads, R. & E. Mfg. Co.'s list, 60¢ @ 100¢ @ 60¢  
 See also Nails, Wire.  
**Tanks, Oil—**  
 Emerald, S. S. & Co., 30-gal. Each, \$3.40  
 Emerald, S. S. & Co., 60-gal., \$4.25  
 Queen City S. S. & Co., 85-gal., \$3.65  
 Queen City S. S. & Co., 60-gal., \$4.50

**Tapes Measuring—**

American Asses' Skin, 40¢ @ 100¢ @ 50¢  
 Patent Leather, 25¢ @ 30¢ @ 50¢  
 Steel, 40¢ @ 100¢ @ 50¢  
 Chesterman's, 25¢ @ 25¢ @ 50¢  
 Keuffel & Esser Co., Steel and Metallic, Lower list, 1899, 33¢ @ 33¢  
 Lufkin's Steel, 33¢ @ 33¢  
 Lufkin's Metallic, 30¢ @ 30¢ @ 50¢

**Teeth Harrow—**

Steel Harrow Teeth, plain or headed, 5¢ inch and larger, per 100 lbs., \$5.00

**Thermometers—**

Tin Case, 30¢ @ 100¢ @ 30¢ @ 100¢ @ 50¢

**Ties, Bale—Steel Wire.**

Single Loop, 80¢ @ 24¢



|   |                                      |
|---|--------------------------------------|
| <b>Tools—Coopers'—</b>                    |                                      |
| L. & I. J. White                          | 30@20.50                             |
| <b>Hay—</b>                               |                                      |
| Myers' Hay Tools                          | 50%                                  |
| <b>Saw—</b>                               |                                      |
| Atkins' Cross Cut Saw Tools               | 40%                                  |
| Simonds' Improved                         | 35%                                  |
| Simonds' Crescent                         | 35%                                  |
| <b>Ship—</b>                              |                                      |
| L. & I. J. White                          | 25%                                  |
| <b>Transom Lifters—</b>                   |                                      |
| See Lifters, Transom.                     |                                      |
| <b>Traps—Fly—</b>                         |                                      |
| Balloon, Globe or Acme                    | doz. \$1.15@1.25; gro. \$11.50@12.00 |
| Harper, Champion or Paragon               | doz. \$1.25@1.40; gro. \$13.00@13.50 |
| <b>Game—</b>                              |                                      |
| Oneida Pattern                            | 80@30.50                             |
| Newhouse                                  | 45@45.50                             |
| Hawley & Norton                           | 65@50.50                             |
| Victor (Oneida Pattern)                   | 75@75.50                             |
| Star (Blake Pattern)                      | 60@60.50                             |
| <b>Mouse and Rat—</b>                     |                                      |
| Mouse, Wood, Choker, doz. holes           | 85@90                                |
| Mouse, Round or Square Wire               | doz. 85@90                           |
| <b>Marty French Rat and Mouse Traps</b>   |                                      |
| (Genuine):                                |                                      |
| No. 1, Rat, Each \$1.12 1/2; doz. \$12.00 |                                      |
| No. 3, Rat, \$1.00; case of 50            | \$5.25 doz.                          |
| No. 3 1/2, Rat, \$1.15; case of 50        | \$5.75 doz.                          |
| No. 4, Mouse, \$1.00; case of 50          | \$5.25 doz.                          |
| No. 5, Mouse, \$1.15; case of 50          | \$5.75 doz.                          |
| Schuyler's Rat Killer, No. 1, \$1.00      |                                      |
| No. 2, \$1.00; Mouse, No. 3, \$1.00       |                                      |
| J. M. Mast Mfg. Co.                       | 50%                                  |
| <b>Mouse, Rat</b>                         |                                      |
| Blizzard                                  | No. 12, \$3.00; No. 1, \$9.50        |
| Old Nick                                  | No. 30, 2.22; No. 2, 8.40            |
| Joker                                     | No. 5, 2.10; No. 3, 8.40             |
| Imp'd Snap Shot, Mouse, per gro., 2       | hole, \$2.40                         |
| Imp'd Snap Shot, Mouse, per gro., 4       | hole, \$4.20                         |
| <b>Trimmers Spoke—</b>                    |                                      |
| Bonney's No. 1 and 2                      | 40%                                  |
| Wood's E. I.                              | 50%                                  |
| <b>Trowels—</b>                           |                                      |
| Disston Brick and Pointing                | 30%                                  |
| Disston Plastering                        | 25%                                  |
| Disston "Standard Brand" and G. A.        | 35%                                  |
| Don Trowels                               | 50%                                  |
| Kohler's Steel Garden Trowels, 5 in.      | per gro. \$5.00                      |
| Kohler's Steel Garden Trowels, 6 in.      | per gro. \$6.00                      |
| Never-Break Steel Garden Trowels          | per gro. \$6.00                      |
| Peace's Plastering                        | 30%                                  |
| Rose Brick and Plastering                 | 25%                                  |
| Woodrough & McParlin, Plastering          | 25%                                  |
| <b>Trucks, Warehouse, &amp;c.—</b>        |                                      |
| B. & L. Block Co.                         |                                      |
| New York Pattern                          | 50@10%                               |
| Western Pattern                           | 60@10%                               |
| Handy Trucks                              | per doz. \$16.00                     |
| Grocery                                   | per doz. \$15.00                     |
| Daisy Stove Trucks, Improved pattern      | per doz. \$18.50                     |
| Model Stove Trucks                        | per doz. \$18.50                     |
| <b>Tubs, Wash—</b>                        |                                      |
| No. 1 2 3                                 |                                      |
| Galvanized, per doz.                      | \$4.75 5.35 6.00                     |
| Galvanized Wash Tubs (S. S. & Co.)        |                                      |
| No. 1 2 3                                 | 10 20 30                             |
| Per doz. \$5 25 6.00 6.75 6.50 7.00 8.00  |                                      |
| <b>Twine—Miscellaneous—</b>               |                                      |
| Flax Twine—                               |                                      |
| No. 9, 1 1/4 and 1 1/2 lb. Balls 23 1/2c  |                                      |
| No. 12, 1 1/4 and 1 1/2 lb. Balls 17 1/2c |                                      |
| No. 15, 1 1/4 and 1 1/2 lb. Balls 15 1/2c |                                      |
| No. 18, 1 1/4 and 1 1/2 lb. Balls 13 1/2c |                                      |
| No. 21, 1 1/4 and 1 1/2 lb. Balls 11 1/2c |                                      |
| No. 24, 1 1/4 and 1 1/2 lb. Balls 9 1/2c  |                                      |
| Chalk Line, Cotton, 1/4-lb. Balls         | 22@23 1/2c                           |

|   |                |
|---|----------------|
| <b>Cotton Mops, 6, 9, 12 and 15 lb. to</b>  |                |
| doz.  | 80c            |
| <b>Cotton Wrapping 5 Balls to lb.</b>       |                |
| according to quality.                       | 11c@17c        |
| <b>American 2-Ply Hemp, 1/4 and 1/2-lb.</b> |                |
| Balls                                       | 13@14c         |
| <b>American 3-Ply Hemp, 1-lb. Balls</b>     |                |
|   | 13@14c         |
| <b>India 2-Ply Hemp, 1/4 and 1/2-lb.</b>    |                |
| Balls (Spring Twine)                        | 8c             |
| India 3-Ply Hemp, 1-lb. Balls               | 8c             |
| India 5-Ply Hemp, 1 1/4-lb. Balls           | 7c             |
| 2, 3, 4 and 5-Ply Jute, 1/4-lb. Balls       | 8@9c           |
| <b>Mason Line, Linen, 1/4-lb. Balls</b>     |                |
| No. 25, Mattress, 1/4 and 1/2-lb. Balls     | 37c            |
| Wool, 3 to 6 ply                            | 5@5 1/2c       |
| <b>Binder—</b>                              |                |
| Cents per lb.                               |                |
| Sisal                                       | 10 1/4         |
| Standard                                    | 10 1/4         |
| Standard Manila (550 ft.)                   | 11             |
| Manila (600 ft.)                            | 12             |
| Pure Manila (650 ft.)                       | 12 1/4         |
| F. O. B. Eastern Mill. Carload lots         | 1/4 cent less. |

|                              |             |
|------------------------------|-------------|
| <b>Vises—</b>                |             |
| Solid Box                    |             |
| 50c@10@50@100c               |             |
| <b>Parallel—</b>             |             |
| Athol Machine Co.            |             |
| Simpson's Adjustable         | 40%         |
| Standard                     | 40%         |
| Amateur                      | 25%         |
| Bonney's                     | 40%         |
| Columbian Hdw. Co.           | 40%         |
| Emmert Universal             | 40%         |
| Pattern Makers' No. 1        | \$15.00 net |
| Pattern Makers' No. 2        | \$13.00 net |
| Machine and Tool Makers'     | \$15.00 net |
| Fisher & Norris Double Screw | 15@10%      |
| Hollands'                    |             |
| Machinists'                  | 40%         |
| Keystone                     | 65@55%      |
| Lewis Tool Co.               | 20@30%      |
| Merrill's                    | 20%         |
| Miller's Falls               | 50@10%      |
| Parker's                     |             |
| Victor                       | 20@25%      |
| Regulars                     | 20@25%      |
| Vulcan's                     | 40@45%      |
| Combination Pipe             | 55@60%      |
| Prentiss                     | 20@25%      |
| Sargent's                    | 40%         |
| Smith & Heinenway Co.        |             |
| Machinists'                  | 40%         |
| Jewelers                     | 38 1/2%     |
| Snediker's X. I.             | 33 1/2%     |
| Stephens'                    | 33 1/2%     |

|   |        |
|---|--------|
| <b>Saw Filers—</b>                          |        |
| Bonney's No. 1, \$1.13; No. 3, \$1.10       |        |
| Disston's D 3 Clamp and Guide, per doz.     | \$30   |
| Reading                                     | 60%    |
| Wentworth's Rubber Jaw, Nos. 1, 2           | and 3. |
|   | 45@50% |
| <b>Wood Workers—</b>                        |        |
| Wyman & Gordon's Quick Action, 6            |        |
| In., \$6.00; 9 In., \$7.00; 14 In., \$8.00. |        |
| <b>Miscellaneous—</b>                       |        |
| Bignall & Keefer Combination Pipe           |        |
| Vise  | 80%    |
| Parker's Combination Pipe                   |        |
| 8 1/2 Series                                | 40%    |
| 18 1/2 Series                               | 60@55% |
| No. 870                                     | 40%    |

|                            |             |
|----------------------------|-------------|
| <b>Wads—Price Per M.</b>   |             |
| B. E., 11 up               |             |
|                            | 60c         |
| B. E., 9 up and 10         |             |
|                            | 70c         |
| B. E., 8                   |             |
|                            | 80c         |
| B. E., 7                   |             |
|                            | 90c         |
| P. E., 11 up               |             |
|                            | \$1.00      |
| P. E., 9 and 10            |             |
|                            | 1.25        |
| P. E., 8                   |             |
|                            | 1.50        |
| P. E., 7                   |             |
|                            | 1.50        |
| Ely's B. E., 11 and larger |             |
|                            | \$1.70@1.75 |
| Ely's P. E., 12 to 20      |             |
|                            | \$3.00@3.25 |

|                             |          |
|-----------------------------|----------|
| <b>Ware Hollow—</b>         |          |
| <b>Cast Iron, Hollow—</b>   |          |
| <b>Stove Hollow Ware:</b>   |          |
| Ground                      | 50c@100c |
| Unground                    | 60c@50c  |
| <b>White Enameled Ware:</b> |          |
| Maolin Kettles              | 70%      |
| <b>Covered Ware:</b>        |          |
| Tinned and Turned           | 40%      |
| Enameled                    | 50%      |
| See also Pots Glue.         |          |

|                                       |                 |
|---------------------------------------|-----------------|
| <b>Enameled—</b>                      |                 |
| Agate Nickel Steel Ware, list Nov. 1, |                 |
| 01                                    | 50@30%          |
| Iron Clad Ware                        |                 |
| Lava, Enameled                        | 40@10%          |
| Never Break Enameled                  |                 |
|                                       | 50%             |
| <b>Tea Kettles—</b>                   |                 |
| Galvanized Tea Kettles:               |                 |
| Inch                                  | 6 7 8 9         |
| Each                                  | 50c 50c 50c 50c |

|                                  |        |
|----------------------------------|--------|
| <b>Steel Hollow Ware.</b>        |        |
| Avery Spiders & Griddles         |        |
| Avery Kettles                    | 65@55% |
| Porcelain                        | 50@50% |
| Never Break Spiders and Griddles |        |
|                                  | 65@55% |
| <b>Never Break Kettles</b>       |        |
| Solid Steel Spiders & Griddles   | 65@55% |
| Solid Steel Kettles              | 60%    |

|                                      |               |
|--------------------------------------|---------------|
| <b>Warmers, Foot—</b>                |               |
| Pike Mfg. Co., Soapstone             |               |
|                                      | 40@40@10%     |
| <b>Washboards—</b>                   |               |
| Solid Zinc                           |               |
| Crescent, family size, bent frame    | \$3.00        |
| Red Star, family size, stationary    | protector     |
|                                      | \$3.00        |
| <b>Double Zinc Surface:</b>          |               |
| Saginaw Globe, family size, station- | ary protector |
|                                      | \$2.65        |
| Cable Cross, family size, stationary | protector     |
|                                      | \$3.00        |

|                                       |                       |
|---------------------------------------|-----------------------|
| <b>Single Zinc Surface:</b>           |                       |
| Salad, family size, open back perfor- | ated                  |
|                                       | \$2.40                |
| Saginaw Globe, protector, family      | size, ventilated back |
|                                       | \$2.25                |
| <b>Brass Surface:</b>                 |                       |
| Brass King, Single Surface, open      | back                  |
|                                       | \$3.00                |
| <b>Nickel Plate Surface:</b>          |                       |
| No. 1001 Nickel Plate, Single Surface |                       |
|                                       | \$3.00                |

|                         |                        |
|-------------------------|------------------------|
| <b>Washers—</b>         |                        |
| <b>Leather, Axle—</b>   |                        |
| Solid                   |                        |
|                         | 85c@100c@85c@100c@100c |
| <b>Patent</b>           |                        |
|                         | 85c@100c@85c@100c      |
| <b>Coil:</b>            |                        |
| 1/2 1 1 1/2 1 3/4 1 1/2 | per 100                |
| 1c 10c 11c 13c          |                        |

|  |                            |
|--|----------------------------|
| <b>Iron or Steel—</b>                  |                            |
| Size bolt                              |                            |
| 5-16 3/4 1/2 3/4 1/2 3/4               |                            |
| Washers                                | \$1.50 5.50 4.50 4.50 4.50 |
| In lots less than one keg add 1/2c per |                            |
| lb., 5-lb. boxes add 1/2c to list.     |                            |

|                                     |       |
|-------------------------------------|-------|
| <b>Cast Washers—</b>                |       |
| Over 1/2 inch, barrel lots, per lb. |       |
|                                     | 14@2c |

|                         |                |
|-------------------------|----------------|
| <b>Wedges—</b>          |                |
| Oil Finish              |                |
|                         | lb. 2.90@3.10c |
| <b>Weights—</b>         |                |
| <b>Hitching—</b>        |                |
| Covert's Saddlery Works |                |
|                         | 60@10%         |

|                                      |         |
|--------------------------------------|---------|
| <b>Sash—</b>                         |         |
| Eastern District                     |         |
|                                      | \$26.00 |
| <b>Western, Central and Southern</b> |         |
| Districts                            | \$27.00 |

|  |                         |
|--|-------------------------|
| <b>Wheels, Well—</b>                     |                         |
| 8-in., \$1.60; 10-in., \$2.00@2.25       |                         |
| 12-in., \$2.15@2.65; 14-in., \$4.00@4.25 |                         |
| <b>Wire and Wire Goods—</b>              |                         |
| Bright and Annealed:                     |                         |
| 6 to 9                                   | 72 1/2c@72 1/2c@72 1/2c |
| 10 to 12                                 | 72 1/2c@72 1/2c@72 1/2c |
| 13 to 16                                 | 75c@75c@75c@75c         |
| 17 to 20                                 | 75c@75c@75c@75c         |
| 21 to 24                                 | 75c@75c@75c@75c         |
| 25 to 28                                 | 75c@75c@75c@75c         |

|                                 |                     |
|---------------------------------|---------------------|
| <b>Galvanized:</b>              |                     |
| 6 to 18                         | 70c@70c@55          |
| 19 to 26                        | 72 1/2c@72 1/2c@10% |
| 27 to 36                        | 72 1/2c@72 1/2c@10% |
| <b>Coppered:</b>                |                     |
| 6 to 18                         | 70c@70c@10%         |
| 19 to 26                        | 70c@70c@10%         |
| 27 to 36                        | 75c@75c@10%         |
| 37 to 44                        | 75c@75c@10%         |
| 45 to 52                        | 75c@75c@10%         |
| 53 to 60                        | 75c@75c@10%         |
| 61 to 68                        | 75c@75c@10%         |
| 69 to 76                        | 75c@75c@10%         |
| 77 to 84                        | 75c@75c@10%         |
| 85 to 92                        | 75c@75c@10%         |
| 93 to 100                       | 75c@75c@10%         |
| <b>Annealed Wire on Spools</b>  |                     |
| Brass and Copper Wire on Spools | 70c@70c@55          |
|                                 | 60c@60c@55          |

|                                 |                   |
|---------------------------------|-------------------|
| <b>Brass, list Feb. 26, '96</b> |                   |
| Copper, list Feb. 26, '96       | 15%               |
| Cast Steel Wire                 | 50%               |
| Stubs' Steel Wire               | \$6.00 to \$2.40% |
| Wire Clothes Line, see Lines    |                   |
| Wire Picture Cord, see Cord     |                   |

|                           |               |
|---------------------------|---------------|
| <b>Bright Wire Goods—</b> |               |
| List April 1, 1901        |               |
|                           | 85c@100c@100% |

|   |              |
|---|--------------|
| <b>Wire Cloth and Netting—</b>          |              |
| Galvanized Wire Netting 80@80c@10%      |              |
| Painted Screen Cloth per 100 ft. \$1.15 |              |
| <b>Light Hardware Grade</b>             |              |
| 2-8 Mesh, Plain (Sc. list) sq. ft.      | 14@2c        |
| 2-8 Mesh, Galv. (Sc. list) sq. ft.      | 2 1/2@2 1/2c |

|                                     |             |
|-------------------------------------|-------------|
| <b>Wire, Barb—See Trade Report.</b> |             |
| <b>Wrenches—</b>                    |             |
| Agricultural                        |             |
|                                     | 80c@80c@10% |
| <b>Barter Pat'n S Wrenches</b>      |             |
|                                     | 70c@70c@10% |

|                              |             |
|------------------------------|-------------|
| <b>Drop Forged S.</b>        |             |
|                              | 45@55%      |
| <b>Acme</b>                  |             |
|                              | 60@10%      |
| <b>Aligator</b>              |             |
|                              | 70%         |
| <b>Aligator Pattern</b>      |             |
|                              | 70%         |
| <b>Bull Dog</b>              |             |
|                              | 70%         |
| <b>Bent's Call's</b>         |             |
| Adjustable S.                | 35@55%      |
| Adjustable S Pipe            | 40%         |
| Briggs' Pattern              | 30@10%      |
| Combination Black            | 40@55%      |
| Combination Bright           | 40%         |
| Cylinder or Gas Pipe         | 55%         |
| Extra Heavy                  | 45%         |
| Merrick's Pattern            | 50%         |
| No. 3 Pipe, Bright           | 55%         |
| Boardman's                   | 38 1/4%     |
| Coe's Genuine                | 40@100c@55% |
| Coe's Mechanical             | 40@100c@55% |
| Donohue's Engineer           | 40@10%      |
| Dully Auto                   | 50@50@10%   |
| Eagle                        | 50@10%      |
| Elgin Wrenches               | 40%         |
| Elgin Monkey Wrench Fine Jaw | 38 1/4%     |
| Gem Pocket                   | 30%         |
| Herules                      | 70%         |
| W. & B. Machinist            | 70%         |
| <b>Case lots.</b>            |             |
| Less than case lots          | 50@55%      |
| Improved Pipe (W. & B.)      | 60%         |
| Solid Handle, P. S. & W.     | 50@50@55%   |
| Schlumberger                 | 65%         |
| Triumph                      | 60@10%      |
| Vulcan Chain                 | 50%         |

|                                     |                  |
|-------------------------------------|------------------|
| <b>Fruit Jar—</b>                   |                  |
| Triumph Fruit Can Wrenches          |                  |
|                                     | per gro. \$19.20 |
| <b>Syrup Cap Wrenches</b>           |                  |
|                                     | 3 gro. \$2.00    |
| <b>T &amp; B Fruit Jar Wrenches</b> |                  |
|                                     | per gro. \$16.50 |
| <b>T &amp; B Fruit Jar Holders</b>  |                  |
|                                     | per gro. \$30.00 |

|                                    |            |
|------------------------------------|------------|
| <b>Wrought Goods—</b>              |            |
| Staples, Hooks, &c., list March 17 |            |
|                                    | 70c@90c@55 |

|                                      |          |
|--------------------------------------|----------|
| <b>Yokes Neck—</b>                   |          |
| Covert Saddlery Works, Trimmed Yokes |          |
|                                      | 70%      |
| <b>Yokes, Ox, and Ox Rows—</b>       |          |
| Fort Madison's Farmers & Freighters  |          |
|                                      | list oct |
| <b>Zinc—</b>                         |          |

## CURRENT METAL PRICES.

MAY 20, 1903.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—  
Bar Iron from Store—

|   |            |
|---|------------|
| Refined Iron:                                   |            |
| 1 to 1 1/2 in. round and square.....            | @2.20c     |
| 1 1/2 to 4 in. x 1/2 to 1 in. ....              | @2.10c     |
| 1 1/2 to 4 in. x 1/2 to 5-10. ....              | @2.40c     |
| Rods—1/2 and 1-1/2 round and square. ....       | @2.40c     |
| Angles:   |            |
| 3 in. x 1/2 n. and larger.....                  | 3.50c      |
| 3 in. x 3-10 in. and 1/2 in. ....               | 3.00c      |
| 1 1/2 to 2 1/2 in. x 1/2 in. ....               | 2.40c      |
| 1 1/2 to 2 1/2 in. x 3-10 in. and thicker. .... | 2.35c      |
| 1 to 1 1/2 in. x 3-10 in. ....                  | 2.40c      |
| 1 to 1 1/2 x 1/2 in. ....                       | 2.45c      |
| 1/2 x 1/2 in. ....                              | 2.60c      |
| 1/2 x 1/2 in. ....                              | 2.70c      |
| 1/2 x 1/2 in. ....                              | 3.50c      |
| 1/2 x 3-12 in. ....                             | 4.00c      |
| Test:   |            |
| 1 in. ....                                      | 2.80c      |
| 1 1/2 in. ....                                  | 2.60c      |
| 1 1/2 in. and larger.....                       | 2.50c      |
| Beams.....                                      | 2.50@3.00c |
| Channels, 3 in. and larger.....                 | 2.50@3.00c |
| Bands—1/2 to 6 x 3-10 to No. 8. ....            | 2.40c      |
| "Burden's Best" Iron, base price.....           | 2.30c      |
| Burden's "H. B. & S." Iron, base price.....     | 3.10c      |
| "Uster".....                                    | 3.15c      |
| Norway Bars.....                                | 3.75@4.25c |
| Norway Shapes.....                              | 4.00@4.50c |

## Merchant Steel from Store—

|  |            |
|--|------------|
| Bessemer Machinery.....                        | per lb     |
| Toe Calk, Tire and Sleigh Shoe.....            | 2.30@3.00c |
| Best Cast Steel, base price in small lots..... | 7c         |

## Soft Steel Sheets—

|               |       |             |       |
|---------------|-------|-------------|-------|
| 1/2 inch..... | 2.50c | No. 14..... | 2.70c |
| 1/2 inch..... | 2.50c | No. 16..... | 2.80c |
| No. 8.....    | 2.50c | No. 18..... | 3.00c |
| No. 10.....   | 2.50c | No. 20..... | 3.00c |
| No. 12.....   | 2.60c | No. 22..... | 3.10c |

## Sheet Iron from Store.

|                     | One Pass, C. R. | G. R.    |
|---------------------|-----------------|----------|
|                     | Soft Steel      | Cleaned. |
| Nos. 14 to 16.....  | \$ 2.90         | 3.0c     |
| Nos. 18 to 20.....  | \$ 3.00         | 3.10c    |
| Nos. 22 to 24.....  | \$ 3.10         | 3.20c    |
| Nos. 25 and 26..... | \$ 3.20         | 3.30c    |
| No. 27.....         | \$ 3.30         | 3.40c    |
| No. 28.....         | \$ 3.40         | 3.50c    |

## Russia, Planished, &amp;c.

|  |                    |
|--|--------------------|
| Genuine Russia, according to assortment..... | \$ 11 1/2 @ 14 1/2 |
| Patent Planished.....                        | \$ 10 @ 14 1/2     |

## Galvanized.

|   |          |
|---|----------|
| Nos. 14 to 16.....                              | \$ 3.24c |
| Nos. 18 to 20.....                              | \$ 3.51c |
| Nos. 22 to 24.....                              | \$ 3.78c |
| No. 26.....                                     | \$ 4.05c |
| No. 27.....                                     | \$ 4.32c |
| No. 28.....                                     | \$ 4.59c |
| No. 30.....                                     | \$ 5.07c |
| No. 20 and lighter, 36 inches wide, 25c higher. |          |

## Foreign Steel from Store—

|   |       |
|---|-------|
| Best Cast.....                              | \$ 15 |
| Extra Cast.....                             | \$ 15 |
| Swaged, Cast.....                           | \$ 15 |
| Best Double Shear.....                      | \$ 15 |
| Blister, 1st quality.....                   | \$ 13 |
| German Steel, Best.....                     | \$ 10 |
| 2d quality.....                             | \$ 9  |
| 3d quality.....                             | \$ 8  |
| Sheet Cast Steel, 1st quality.....          | \$ 15 |
| 2d quality.....                             | \$ 14 |
| 3d quality.....                             | \$ 12 |
| R. Mushet's "Special".....                  | \$ 46 |
| "Titanic".....                              | \$ 75 |
| Jeason's Choice XX Extra Best.....          | \$ 35 |
| Jeason Self Hardening.....                  | \$ 45 |
| Benmans "Nelson" Steel.....                 | \$ 40 |
| Hobson's "Soho" Special Self-Hardening..... | \$ 43 |

## METALS—

## Tin—

|                                   |                  |
|-----------------------------------|------------------|
| Duty, Pigs, Bars and Block. Free. | Per lb           |
| Banca, Pigs.....                  | \$1 @ \$1.10c    |
| Straits, Pigs.....                | \$1 @ \$1.10c    |
| Straits in Bars.....              | \$1.10 @ \$1.20c |

## Tin Plates—

## American Charcoal Plates.

|                  |        |
|------------------|--------|
| Coil and Grade:  |        |
| IX, 14 x 20..... | \$0.75 |
| IX, 14 x 20..... | \$2.25 |
| Melvin Grade:    |        |
| IX, 14 x 20..... | \$6.50 |
| IX, 14 x 20..... | \$7.75 |
| Alway Grade:     |        |
| IX, 14 x 20..... | \$5.50 |
| IX, 14 x 20..... | \$6.00 |

## American Coke Plates—Bessemer.

|                  |                 |
|------------------|-----------------|
| IX, 14 x 20..... | \$4.70 @ \$4.80 |
| IX, 14 x 20..... | \$3.00 @ \$3.25 |

## American Terne Plates—

|                  |         |
|------------------|---------|
| IX, 20 x 28..... | \$9.50  |
| IX, 20 x 28..... | \$11.50 |

## Copper—

|   |  |
|---|--|
| Duty: Pig, Bar and Ingot and Old Copper free. |  |
| Manufactured, 2 1/2c per lb.                  |  |

## Ingot—

|               |         |
|---------------|---------|
| Lake.....     | 15 1/2c |
| Castings..... | 15c     |

## Sheet and Bolt—

| March 12, 1903.             |                 | Net.            |                 |
|-----------------------------|-----------------|-----------------|-----------------|
| Prices, in cents per pound. |                 |                 |                 |
| Sheet 30 x 60.              |                 |                 |                 |
| Not wider than              | Not longer than | And longer than | And longer than |
| Ins.                        | Ins.            | Ins.            | Ins.            |
| 30                          | 72              | 20              | 21              |
| 30                          | 96              | 20              | 21              |
| 30                          | 120             | 20              | 21              |
| 30                          | 144             | 20              | 21              |
| 30                          | 168             | 20              | 21              |
| 30                          | 192             | 20              | 21              |
| 30                          | 216             | 20              | 21              |
| 30                          | 240             | 20              | 21              |
| 30                          | 264             | 20              | 21              |
| 30                          | 288             | 20              | 21              |
| 30                          | 312             | 20              | 21              |
| 30                          | 336             | 20              | 21              |
| 30                          | 360             | 20              | 21              |
| 30                          | 384             | 20              | 21              |
| 30                          | 408             | 20              | 21              |
| 30                          | 432             | 20              | 21              |
| 30                          | 456             | 20              | 21              |
| 30                          | 480             | 20              | 21              |
| 30                          | 504             | 20              | 21              |
| 30                          | 528             | 20              | 21              |
| 30                          | 552             | 20              | 21              |
| 30                          | 576             | 20              | 21              |
| 30                          | 600             | 20              | 21              |
| 30                          | 624             | 20              | 21              |
| 30                          | 648             | 20              | 21              |
| 30                          | 672             | 20              | 21              |
| 30                          | 696             | 20              | 21              |
| 30                          | 720             | 20              | 21              |
| 30                          | 744             | 20              | 21              |
| 30                          | 768             | 20              | 21              |
| 30                          | 792             | 20              | 21              |
| 30                          | 816             | 20              | 21              |
| 30                          | 840             | 20              | 21              |
| 30                          | 864             | 20              | 21              |
| 30                          | 888             | 20              | 21              |
| 30                          | 912             | 20              | 21              |
| 30                          | 936             | 20              | 21              |
| 30                          | 960             | 20              | 21              |
| 30                          | 984             | 20              | 21              |
| 30                          | 1008            | 20              | 21              |
| 30                          | 1032            | 20              | 21              |
| 30                          | 1056            | 20              | 21              |
| 30                          | 1080            | 20              | 21              |
| 30                          | 1104            | 20              | 21              |
| 30                          | 1128            | 20              | 21              |
| 30                          | 1152            | 20              | 21              |
| 30                          | 1176            | 20              | 21              |
| 30                          | 1200            | 20              | 21              |
| 30                          | 1224            | 20              | 21              |
| 30                          | 1248            | 20              | 21              |
| 30                          | 1272            | 20              | 21              |
| 30                          | 1296            | 20              | 21              |
| 30                          | 1320            | 20              | 21              |
| 30                          | 1344            | 20              | 21              |
| 30                          | 1368            | 20              | 21              |
| 30                          | 1392            | 20              | 21              |
| 30                          | 1416            | 20              | 21              |
| 30                          | 1440            | 20              | 21              |
| 30                          | 1464            | 20              | 21              |
| 30                          | 1488            | 20              | 21              |
| 30                          | 1512            | 20              | 21              |
| 30                          | 1536            | 20              | 21              |
| 30                          | 1560            | 20              | 21              |
| 30                          | 1584            | 20              | 21              |
| 30                          | 1608            | 20              | 21              |
| 30                          | 1632            | 20              | 21              |
| 30                          | 1656            | 20              | 21              |
| 30                          | 1680            | 20              | 21              |
| 30                          | 1704            | 20              | 21              |
| 30                          | 1728            | 20              | 21              |
| 30                          | 1752            | 20              | 21              |
| 30                          | 1776            | 20              | 21              |
| 30                          | 1800            | 20              | 21              |
| 30                          | 1824            | 20              | 21              |
| 30                          | 1848            | 20              | 21              |
| 30                          | 1872            | 20              | 21              |
| 30                          | 1896            | 20              | 21              |
| 30                          | 1920            | 20              | 21              |
| 30                          | 1944            | 20              | 21              |
| 30                          | 1968            | 20              | 21              |
| 30                          | 1992            | 20              | 21              |
| 30                          | 2016            | 20              | 21              |
| 30                          | 2040            | 20              | 21              |
| 30                          | 2064            | 20              | 21              |
| 30                          | 2088            | 20              | 21              |
| 30                          | 2112            | 20              | 21              |
| 30                          | 2136            | 20              | 21              |
| 30                          | 2160            | 20              | 21              |
| 30                          | 2184            | 20              | 21              |
| 30                          | 2208            | 20              | 21              |
| 30                          | 2232            | 20              | 21              |
| 30                          | 2256            | 20              | 21              |
| 30                          | 2280            | 20              | 21              |
| 30                          | 2304            | 20              | 21              |
| 30                          | 2328            | 20              | 21              |
| 30                          | 2352            | 20              | 21              |
| 30                          | 2376            | 20              | 21              |
| 30                          | 2400            | 20              | 21              |
| 30                          | 2424            | 20              | 21              |
| 30                          | 2448            | 20              | 21              |
| 30                          | 2472            | 20              | 21              |
| 30                          | 2496            | 20              | 21              |
| 30                          | 2520            | 20              | 21              |
| 30                          | 2544            | 20              | 21              |
| 30                          | 2568            | 20              | 21              |
| 30                          | 2592            | 20              | 21              |
| 30                          | 2616            | 20              | 21              |
| 30                          | 2640            | 20              | 21              |
| 30                          | 2664            | 20              | 21              |
| 30                          | 2688            | 20              | 21              |
| 30                          | 2712            | 20              | 21              |
| 30                          | 2736            | 20              | 21              |
| 30                          | 2760            | 20              | 21              |
| 30                          | 2784            | 20              | 21              |
| 30                          | 2808            | 20              | 21              |
| 30                          | 2832            | 20              | 21              |
| 30                          | 2856            | 20              | 21              |
| 30                          | 2880            | 20              | 21              |
| 30                          | 2904            | 20              | 21              |
| 30                          | 2928            | 20              | 21              |
| 30                          | 2952            | 20              | 21              |
| 30                          | 2976            | 20              | 21              |
| 30                          | 3000            | 20              | 21              |
| 30                          | 3024            | 20              | 21              |
| 30                          | 3048            | 20              | 21              |
| 30                          | 3072            | 20              | 21              |
| 30                          | 3096            | 20              | 21              |
| 30                          | 3120            | 20              | 21              |
| 30                          | 3144            | 20              | 21              |
| 30                          | 3168            | 20              | 21              |
| 30                          | 3192            | 20              | 21              |
| 30                          | 3216            | 20              | 21              |
| 30                          | 3240            | 20              | 21              |
| 30                          | 3264            | 20              | 21              |
| 30                          | 3288            | 20              | 21              |
| 30                          | 3312            | 20              | 21              |
| 30                          | 3336            | 20              | 21              |
| 30                          | 3360            | 20              | 21              |
| 30                          | 3384            | 20              | 21              |
| 30                          | 3408            | 20              | 21              |
| 30                          | 3432            | 20              | 21              |
| 30                          | 3456            | 20              | 21              |
| 30                          | 3480            | 20              | 21              |
| 30                          | 3504            | 20              | 21              |
| 30                          | 3528            | 20              | 21              |
| 30                          | 3552            | 20              | 21              |
| 30                          | 3576            | 20              | 21              |
| 30                          | 3600            | 20              | 21              |
| 30                          | 3624            | 20              | 21              |
| 30                          | 3648            | 20              | 21              |
| 30                          | 3672            | 20              | 21              |
| 30                          | 3696            | 20              | 21              |
| 30                          | 3720            | 20              | 21              |
| 30                          | 3744            | 20              | 21              |
| 30                          | 3768            | 20              | 21              |
| 30                          | 3792            | 20              | 21              |
| 30                          | 3816            | 20              | 21              |
| 30                          | 3840            | 20              | 21              |
| 30                          | 3864            | 20              | 21              |
| 30                          | 3888            | 20              | 21              |
| 30                          | 3912            | 20              | 21              |
| 30                          | 3936            | 20              | 21              |
| 30                          | 3960            | 20              | 21              |
| 30                          | 3984            | 20              | 21              |
| 30                          | 4008            | 20              | 21              |
| 30                          | 4032            | 20              | 21              |
| 30                          | 4056            | 20              | 21              |
| 30                          | 4080            | 20              | 21              |
| 30                          | 4104            | 20              | 21              |
| 30                          | 4128            | 20              | 21              |
| 30                          | 4152            | 20              | 21              |
| 30                          | 4176            | 20              | 21              |
| 30                          | 4200            | 20              | 21              |
| 30                          | 4224            | 20              | 21              |
| 30                          | 4248            | 20              | 21              |
| 30                          | 4272            | 20              | 21              |
| 30                          | 4296            | 20              | 21              |
| 30                          | 4320            | 20              | 21              |
| 30                          | 4344            | 20              | 21              |
| 30                          | 4368            | 20              | 21              |
| 30                          | 4392            | 20              | 21              |
| 30                          | 4416            | 20              | 21              |
| 30                          | 4440            | 20              | 21              |
| 30                          | 4464            | 20              | 21              |
| 30                          | 4488            | 20              | 21              |
| 30                          | 4512            | 20              | 21              |
| 30                          | 4536            | 20              | 21              |
| 30                          | 4560            | 20              | 21              |
| 30                          | 4584            | 20              | 21              |
| 30                          | 4608            | 20              | 21              |
| 30                          | 4632            | 20              | 21              |
| 30                          | 4656            | 20              | 21              |
| 30                          | 4680            | 20              | 21              |
| 30                          | 4704            | 20              | 21              |
| 30                          | 4728            | 20              | 21              |
| 30                          | 4752            | 20              | 21              |
| 30                          | 4776            | 20              | 21              |
| 30                          | 4800            | 20              | 21              |
| 30                          | 4824            | 20              | 21              |
| 30                          | 4848            | 20              | 21              |
| 30                          | 4872            | 20              | 21              |
| 30                          | 4896            | 20              | 21              |
| 30                          | 4920            | 20              | 21              |
| 30                          | 4944            | 20              | 21              |
| 30                          | 4968            | 20              | 21              |
| 30                          | 4992            | 20              | 21              |
| 30                          | 5016            | 20              | 21              |
| 30                          | 5040            | 20              | 21              |
| 30                          | 5064            | 20              | 21              |
| 30                          | 5088            | 20              | 21              |
| 30                          | 5112            | 20              | 21              |
| 30                          | 5136            | 20              | 21              |
| 30                          | 5160            | 20              | 21              |
| 30                          | 5184            | 20              | 21              |
| 30                          | 5208            | 20              | 21              |
| 30                          | 5232            | 20              | 21              |
| 30                          | 5256            | 20              | 21              |
| 30                          | 5280            | 20              | 21              |
| 30                          | 5304            | 20              | 21              |
| 30                          | 5328            | 20              | 21              |
| 30                          | 5352            | 20              | 21              |
| 30                          | 5376            | 20              | 21              |
| 30                          | 5400            | 20              | 21              |
| 30                          | 5424            | 20              | 21              |
| 30                          | 5448            | 20              | 21              |
| 30                          | 5472            | 20              | 21              |